

# Welcome to the 2020 Online HYSPLIT Workshop (DAY 4 of 4)

The broadcast is scheduled to start at:  
08:30 Eastern Daylight Time (EDT) = 12:30 UTC

NOAA Air Resources Laboratory  
June 22-25, 2020

# Agenda – Day 4

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:05	08:45 – 10:05	15. Radioactive Pollutants and Dose
14:05 – 14:15	10:05 – 10:15	<b>** Special Presentation:</b> <i>An overview of the HySPLIT applications from NCSR Demokritos.</i> Athanasios Sfetsos, NCSR Demokritos, Greece
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	16. Volcanic Eruptions with Gravitational Settling
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 18:00	13:00 – 14:00	17. Custom Simulations (Chris Loughner, NOAA ARL, will present section 17.5)
18:00 – 19:00	14:00 – 15:00	<b>** Special Presentation:</b> <i>STILT Demonstration</i> Derek Mallia, University of Utah, United States
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:30	15:15 – 16:30	Questions from Attendees for Roland Draxler

Note: all times are approximate

## **Day 4, Introduction (8:30 – 8:45)**

**Dr. Mark Cohen, Lead Scientist, HYSPLIT Modeling Group**

- ☐ **Agenda for today**
- ☐ **Very quick recap of logistics**
- ☐ **Key updates on items from yesterday**
- ☐ **Online READY vs. running model on your own computer?**
- ☐ **... And then, on to the course!**

Workshop guidance and resources posted at

[Workshop Web Page](https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php)

`https://www.ready.noaa.gov/  
register/HYSPLIT_hyagenda.php`

+ this Intro presentation available as a Handout, and on Workshop Web Page

+ Roland's presentation slides available as a Handout, and on Workshop Web Page

# Very quick recap of logistics

# Logistics Summary

- ❑ Workshop resources posted at [Workshop Web Page](#)
  - Recordings, files, handouts, virtual posters, ...
- ❑ Everyone's microphone will remain automatically muted throughout the event
- ❑ We may ask you to *Raise your Hand*, e.g., "Are you done with simulation?"
  - We will then automatically lower everyone's hand.
- ❑ Go-to-Webinar Question Panel: General Workshop questions (private, to staff)
- ❑ [HYSPLIT Forum](#): Questions about HYSPLIT, Graphical User Interface, and Tutorial
  - Post in corresponding section that matches relevant Tutorial section
  - Sign up for a free account if you haven't already done this
  - Details for posting in Workshop Intro handouts (e.g., later in this file)
- ❑ Time when each day's recording becomes available has been unpredictable
  - Has ranged from 6 to 18 hours after a given session ends
  - Current status – Day 1 and Day 2 recordings are available; Day 3 recording = (?)
  - Information on viewing videos is on [Workshop Web Page](#), and in Workshop Intro handouts
  - **Note:** Recordings on ARL Web Site will be available much longer than those on Go-to-Webinar server

# Key updates on items from yesterday

# Problem with Ensemble Runs

- There was a problem with the Unregistered PC version of hycs\_ens.exe
  - ✓ (Registered PC version, and both versions for MAC were ok)
  - ✓ Although, for MAC version, if you downloaded and installed before Jun 17, and if you are working on a very small screen, you may have a problem with the Concentration > Display > Contours ... you need a scroll bar to get to the bottom of the menu and this was fixed on Jun 17
- We fixed the error and a new Unregistered PC version is available [here](#)
- But should you update your Unregistered PC version now?
  - ✓ You won't need the new version, until you want to try do the ensemble runs again.
  - ✓ If you aren't planning on trying these, then no need to update your model installation immediately.



# Problem with Ensemble Runs


➤ If/when you decide to update your Unregistered PC version, then:

- ✓ You do **not** need to re-install Tcl/Tk, Ghostscript, Ghostview, or ImageMagick!
- ✓ To be perfectly “safe”, you can first **rename your existing hysplit directory** (e.g., hysplit\_old)
- ✓ You also can **rename your desktop shortcut** to something else (e.g., hysplit\_old) (especially if you had to modify the shortcut because you had a different location for your Tcl executable)
- ✓ **Install new version** in same place you originally had hysplit, following Tutorial section 1.1, subsection 5
- ✓ Then, if you want, you can **copy everything from your old working directory** to the working directory in your new hysplit installation. Then you will have all of the files you have been creating, etc.
- ✓ If you had changed your desktop shortcut because of Tcl location, you can delete newly installed shortcut and **rename old shortcut back to its original name** (it has the corrected Tcl path, if needed)
- ✓ If everything is working and you have all files from your old working directory, **you can delete hysplit\_old**

# Key Updates

[https://www.ready.noaa.gov/register/HYSPLIT\\_hyagenda.php](https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php)

**Recordings.** Videos of each day's on-line sessions are being created for review by participants, e.g., for those in time zones that would make online participation difficult. Processing of the videos to make them viewable takes significant time. There are two places that you will be able to view each day's videos, although each version should be identical:

1. **HYSPLIT Workshop Channel.** This version of each day's video will likely be ready first -- perhaps on the order of only ~8 hours after that day's live event ends -- and will be available, once it is ready, on the [HYSPLIT Workshop channel](#)  hosted by Go-to-Webinar. When you click on one of these videos, you are taken to a simple Go-to-Webinar registration page where you enter your name and email address, and then you should be able to view the video.
2. **The NOAA Air Resources Laboratory website.** This version of the video may take longer to post but will be posted once it is ready. When the video is posted, the corresponding entry below will become a link. When you click on one of these links, you should be able to view the video directly.

▶ [Instructor's presentation slides for days 1 to 4.](#)

▶ [Workshop video recording day 1 \(June 22, 2020\)](#), [Handout with wrap-up for day 1.](#)

▶ [Workshop video recording day 2 \(June 23, 2020\)](#), [Handout with wrap-up for day 2.](#)

▶ Place holder for Day 3 video recording. [Handout with wrap-up for day 3.](#) Meteorological data files for dust storm simulation are available for download:

▶ [1-degree GDAS data spanning from 6/15 to 6/21/2020](#) (572 MB)

▶ [1-degree GFS forecast for the period from 6/22 to 7/1/2020](#) (776 MB) - This file may not work with the unregistered version of HYSPLIT.

A new unregistered version of HYSPLIT for Windows is available [here](#). This version corrects a runtime error for the Ensemble runs in Tutorial Section 12.

▶ Place holder for Day 4 video recording.

**running HYSPLIT online on the  
NOAA READY website**

**VS.**

**downloading and running HYSPLIT  
on your own computer**

**(as we are doing in this Workshop)**

The collage consists of four distinct images. The top-left image shows a landscape with a cloudy sky. The top-right image is a satellite view of Earth, showing a large cloud mass over a landmass. The bottom-left image is a NOAA HYSPALP model plot showing backward trajectories of PM10 and PM2.5 particles from March 10 to 12, 2015, with a color-coded legend for particle size and concentration. The bottom-right image is a map of the United States showing the 300-Vertical Dust (micrometers/2) from March 10 to 12, 2015, with a color scale from 0 to 120.

[illegible]

The figure consists of two meteorogram plots side-by-side.

**Left Plot: COAST Archive METEORGRAM**  
 Station: 11001  
 Latitude: 38.85 Longitude: -77.03  
 Data Source: NOAA AIR RESOURCES LABORATORY  
 The plot shows four time-series graphs for the period 01/01/2002 to 01/01/2003:  
 1. **WIND DIRECTION (DEGREES)**: A bar chart showing wind direction frequency.  
 2. **WIND SPEED (M/S)**: A line graph showing wind speed over time.  
 3. **WIND SPEED (M/S)**: A line graph showing wind speed over time.  
 4. **WIND SPEED (M/S)**: A line graph showing wind speed over time.

**Right Plot: 11001nam12 Wind Rose**  
 Station: 11001  
 Latitude: 38.85 Longitude: -77.03  
 Data Source: NOAA AIR RESOURCES LABORATORY  
 The plot shows a wind rose diagram with a color-coded scale for wind speed (1 to 17 m/s) and a bar chart below it showing wind speed frequency over time.

DATEM Tracer Verification

captex2

chl-a (mg m<sup>-3</sup>)

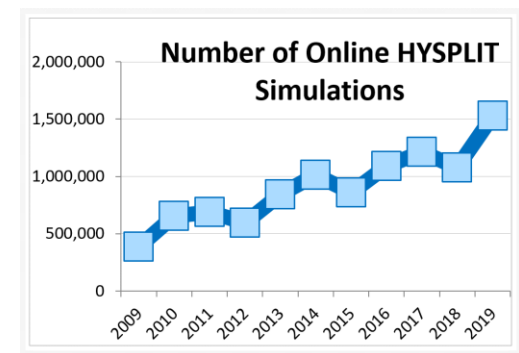
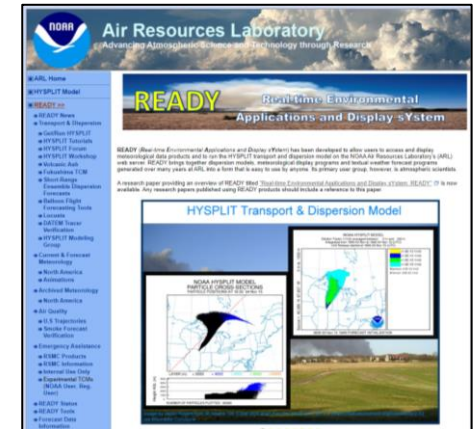
2.0  
1.8  
1.6  
1.4  
1.2  
1.0  
0.8  
0.6  
0.4  
0.2  
0.0

100km

# Different Ways to Use HYSPLIT

## 1. Online - READY Website: <https://www.ready.noaa.gov/index.php>

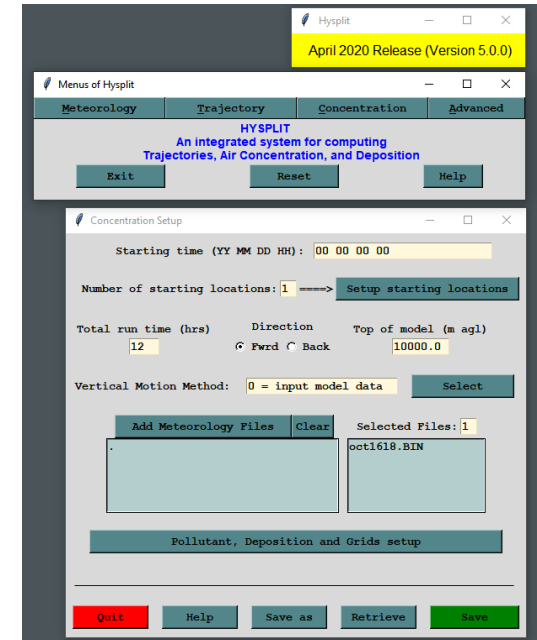
- Real-time Environmental Applications and Display sYstem: READY ([research paper](#))
- Many parts of system (but not all) are open to the public
- Advantages
  - Uses met data directly from our servers, without downloading it
  - HYSPLIT is automatically updated on our site
  - Some tools., e.g., meteograms, not available in the local installation
  - can run the model from anywhere, from a web browser
  - menus for specific applications (volcanoes, fires, locusts, ...)
- Disadvantages
  - menus choices are generally more limited than with GUI
  - limits on length and number of runs, due to computational resource constraints
- Bottom Line
  - If your HYSPLIT needs are met by doing your runs on READY, then by all means, do them there!
  - You are not alone: 1.5 million READY HYSPLIT simulations in 2019
  - If start feeling like options are too limited, then maybe time to install the model locally
  - If you install model locally, you may still do some runs on READY



# Different Ways to Use HYSPLIT

## 2. Download model and run on your local computer with graphical user interface (GUI)

- That's what this Workshop is all about
- Advantages
  - HYSPLIT format met data freely downloadable from READY
  - GUI menus generally have more options for simulations
  - Some tools., e.g., special runs, not available on READY
  - You can do as many and as long of runs as you like.
  - A gateway to eventual scripting
- Disadvantages
  - must download met data from ARL site (or generate your own)
  - you are using your own computational resources
- Bottom Line
  - If READY does not meet your needs, the local installation may be for you
  - And after all, you have now done it in this Workshop





# Different Ways to Use HYSPLIT

## 3. Download model and run on your local computer with scripts

- We've only talked about this a little in this Workshop. At a basic level, a script is a series of terminal commands that you run from a file that you create

- **Advantages**

- Simple scripting languages (DOS Batch, Shell Scripts)
- More complex scripting languages (Python, R, ...)
- More HYSPLIT features available than with GUI
- Re-do runs by just re-running script
- can easily change a few parameters and then just re-run script
- You have a record of exactly what you did
- Can automate runs... E.g., I recently ran 87000 trajectories automatically from a script. Would not be very practical to do this from the GUI

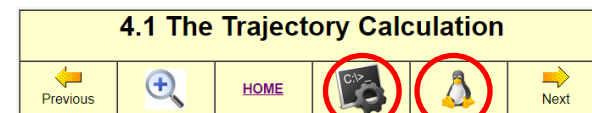
```
echo "$syr $smo $sda $shr" ">CONTROL
echo "1" ">>CONTROL
echo "$olat $olon $olv1" ">>CONTROL
echo "$run" ">>CONTROL
echo "0" ">>CONTROL
echo "$ztop" ">>CONTROL
echo "1" ">>CONTROL
echo "$MET/" ">>CONTROL
echo "$data" ">>CONTROL
echo "$OUT/" ">>CONTROL
echo "tdump" ">>CONTROL
```

- **Disadvantages**

- must learn about scripting, but good help provided in GUI!
- as with GUI, you have to download met data to do your runs, and, are using your own computational resources

- **Bottom Line**

- If you start to find that the GUI does not meet all of your needs, then could begin experimenting with scripts. Once you get something to work, each incremental addition is more and more straightforward
- **But the GUI is a great way to learn how to use HYSPLIT.** Most experienced users will use the GUI when trying something new, and only try a script once they understand what is happening in the GUI.





# Air Resources Laboratory

Advancing Atmospheric Science and Technology through Research

■ ARL Home

■ HYSPLIT Model

■ READY

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- ▶ Transport & Dispersion
  - ▶ Get/Run HYSPLIT
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  - ▶ Volcanic Ash
  - ▶ Fukushima TCM
  - ▶ Short-Range Ensemble Dispersion Forecasts
  - ▶ Balloon Flight Forecasting Tools
  - ▶ Locusts
  - ▶ DATEM Tracer Verification
  - ▶ HYSPLIT Modeling Group
- ▶ Current & Forecast Meteorology
  - ▶ North America
  - ▶ Animations
- ▶ **Archived Meteorology** >>



## Archived Meteorology



### Archived Model Graphics

Choose a forecast location by entering a 3 or 4-character station identifier or a 6-digit WMO index number or a latitude/longitude pair and then click the Continue button, or by clicking on the location in the map. You will be taken to the model products section. Information on ARL's data archive is available at <https://www.ready.noaa.gov/archives.php>.

### Select a Location

#### Using a Code Identifier

Airport or WMO ID:  [Search for Code](#)

#### OR By Selecting a U.S. or World City

Or choose a city

#### OR by Latitude & Longitude

Latitude (degrees)  [Convert Deg/Min/Sec into Decimal Degrees](#)

Longitude (West < 0)

OR click a location on the map below.





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  - ▣ Smoke Forecast Verification
- ▣ Emergency Assistance
  - ▣ RSMC Products
  - ▣ RSMC Information
  - ▣ Internal Use Only
  - ▣ Experimental TCMs (NOAA User, Reg. User)
- ▣ READY Status
- ▣ READY Tools
- ▣ Forecast Data Information

## Gridded Meteorological Data Archives



### Overview

The National Weather Service's National Centers for Environmental Prediction (NCEP) runs a series of computer analyses and forecasts operationally. NOAA's Air Resources Laboratory (ARL) routinely uses NCEP model data for use in air quality transport and dispersion modeling calculations. In 1989 ARL began to archive some of these datasets for future research studies. ARL has in the past, or is presently archiving the following NCEP datasets, which can be retrieved via ftp by clicking on the name of the dataset.

For further information on model changes see the following web sites:

- ▣ <https://www.nco.ncep.noaa.gov/pmb/>
- ▣ <https://www.nco.ncep.noaa.gov/pmb/changes/>
- ▣ <https://www.emc.ncep.noaa.gov/modelinfo/index.html>

### Currently Available Data

- ▣ **NAMS Hybrid sigma-pressure archive (CONUS, Alaska, Hawaii, 2010-)**
  - ▣ FTP Data
    - ▣ [NOAA ARL FTP Server](#)
  - ▣ [Readme file](#)
  - ▣ [CONUS grid domain map](#)
  - ▣ [Alaska grid domain map](#)
  - ▣ [Hawaii grid domain map](#)
  - ▣ [Alaska grid domain map \(before 03/21/2017\)](#)
  - ▣ [Hawaii grid domain map \(before 03/21/2017\)](#)
- ▣ **GDAS one-degree archive (Dec 2004 - present)**
  - ▣ FTP Data
    - ▣ [NOAA NOMADS Server \(recent files only\)](#)

## Meteorological Datasets Available from NOAA ARL Archives\*

(<https://ready.arl.noaa.gov/archives.php>)

	Dataset	Horizontal Resolution (km- approx.)	Full-grid dimensions	Temporal resolution (hrs)	Vertical Levels	Period of each file	Size of each file (GB)	Total size for one month of data (GB)	Availability
North American**	HRRR-3km	3	1799 x 1059	1	37	¼ day	3.2	390	Jun 2015 -> present
	NAMS-12km Hybrid	12 km: Conus 12 km: Alaska 2 km: Hawaii		1	40	1 day	1.0 0.64 0.71	30 19 21	2010 -> present
	NAM-12km	12	614 x 428	3	27	1 day	0.395	12	May 2007 -> present
	WRF-ARW-27km	27	216 x 174	1	35	1 day	0.210	6.4	1980 -> present
	NARR-32km	32	309 x 237	3	24	1 month	2.8	2.8	1979 -> 2019
	EDAS-40km	40	185 x 129	3	27	½ month	0.6	1.2	2004 -> 2018
Global	GFS - 0.25°	27	1440 x 721	3	56	1 day	2.7	82	Jun 2019 -> present
	GDAS - 0.5°	55	720 x 361	3	56	1 day	0.468	14	Sep 2007 -> Jun 2019
	GDAS - 1°	111	360 x 181	3	24	1 week	0.571	2.5	Dec 2004 -> present
	Global Reanalysis - 2.5°	278	144 x 73	6	18	1 month	0.11	0.11	1948 -> present

\* These are the most commonly used datasets, but there are other datasets available in the archive, \*\* All North American datasets cover the Continental United States, but have varying coverage of Canada, Mexico, and adjacent oceanic regions. \*\*\* WRF-27km data will most likely continue to be updated.

Thanks to the

**IT Team** and the **HYSPLIT Team**

of the NOAA Air Resources Laboratory  
for providing behind-the-scenes support  
throughout this Workshop

*...we will try our best to answer all of your questions,  
but we ask for your patience, as there are 100's of  
people in this Workshop and only a few of us...*

Course Instructor

**Roland Draxler**

NOAA Air Resources  
Laboratory (retired)



# Special Presentation

## Special Presentation:

*An overview of the HySPLIT  
applications from NCSR Demokritos*

# Thanasis Sfetsos

Environmental Research Laboratory

National Centre for Scientific Research  
“Demokritos” (NCSR “D”)

Agia Paraskevi , Greece

- B.Sc. in Physics from University of Patras (1995)
- Ph.D. in Electrical Engineering from Imperial College, University of London (1999).
- *Senior Researcher* at the Institute of Nuclear and Radiological Sciences, Technology Energy and Safety at NCSR Demokritos in the field of *Climate Change and Critical Infrastructure Protection*.
- *Research interests*: Resilience and Crisis Management with emphasis on natural hazards; and Climate Change analysis and provision of climate services.
- *Co-authored* more than 200 papers in refereed journals and conference proceedings, including 13 book chapters.
- Participated in more than 25 EU and nationally funded projects
- *Recently coordinated* the H2020 project: *A pan-European framework for strengthening Critical Infrastructure resilience to climate change* (653824 — EU-CIRCLE).

## National Centre for Scientific Research “Demokritos” (NCSR “D”)

- ❑ The Institute of Nuclear & Radiological Sciences and Technology, Energy & Safety (INRASTES) is the largest Institute of the National Centre for Scientific Research “Demokritos” (NCSR “D”) in terms of infrastructure and the second largest in terms of number of personnel.
- ❑ INRASTES is a multidisciplinary research Institution pursuing basic, translational and applied research to address challenges of great scientific and socioeconomic impact in a broad spectrum of scientific and technological fields. With its highly qualified staff and large scale, unique nationwide facilities, INRASTES satisfies the necessary conditions and possesses the potential to achieve critical masses and direct synergies among the various labs and research groups under wide thematic areas creating significant growth prospects and bringing clear socio-economic benefits.
- ❑ The Institute provides expertise in atmospheric research and environmental decision support systems with important research potential, following an integrated R&D approach to environment and climate, contributing to environmental protection and sustainable development in regional and global terms. R&D in climate change and regional models, dynamical downscaling, prognostic – diagnostic meteorology and data assimilation, CFD modelling, decision support systems, dispersion of air pollutants, integrated with advanced risk analysis and impact assessments are subjects of major research focus.





Ινστιτούτο Πυρηνικών & Ραδιολογικών Επιστημών και  
Τεχνολογίας, Ενέργειας και Ασφάλειας **ΙΠΡΕΤΕΑ**



# An overview of the HySPLIT applications from NCSR Demokritos

Thanasis Sfetsos – [ts@ipta.demokritos.gr](mailto:ts@ipta.demokritos.gr)  
Stelios Karozis - [skarozis@ipta.demokritos.gr](mailto:skarozis@ipta.demokritos.gr)

Environmental Research Laboratory  
NCSR Demokritos  
Agia Paraskevi , Greece



# Special Presentation

**Special Presentation:**

# **STILT Demonstration**

## **Derek Mallia**

Postdoctoral Research Associate  
Department of Atmospheric Sciences  
University of Utah  
Salt Lake City, UT 84112, USA

# More Detailed Logistics Information

# Using the Go-to-Webinar Interface

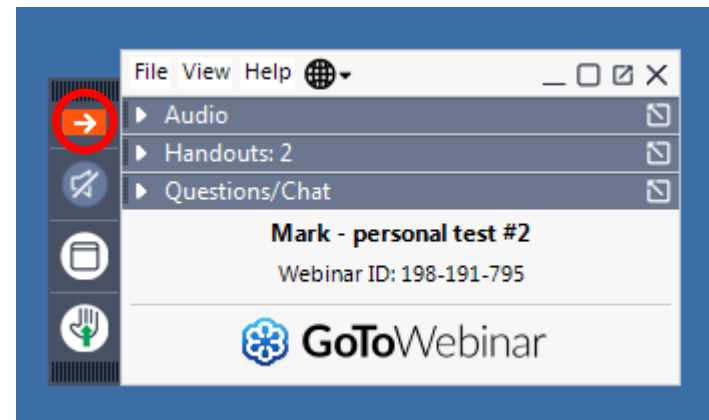
*...this short section about the Go-to-Webinar Interface is only relevant if you are live-streaming the Workshop, but not if you are viewing a recording...*

# Using the Go-to-Webinar Interface



**Click the red  
arrow to toggle  
between hidden  
and not-hidden**

If the Go-to-Webinar  
Control Panel is  
hidden (minimized) it  
will look like this

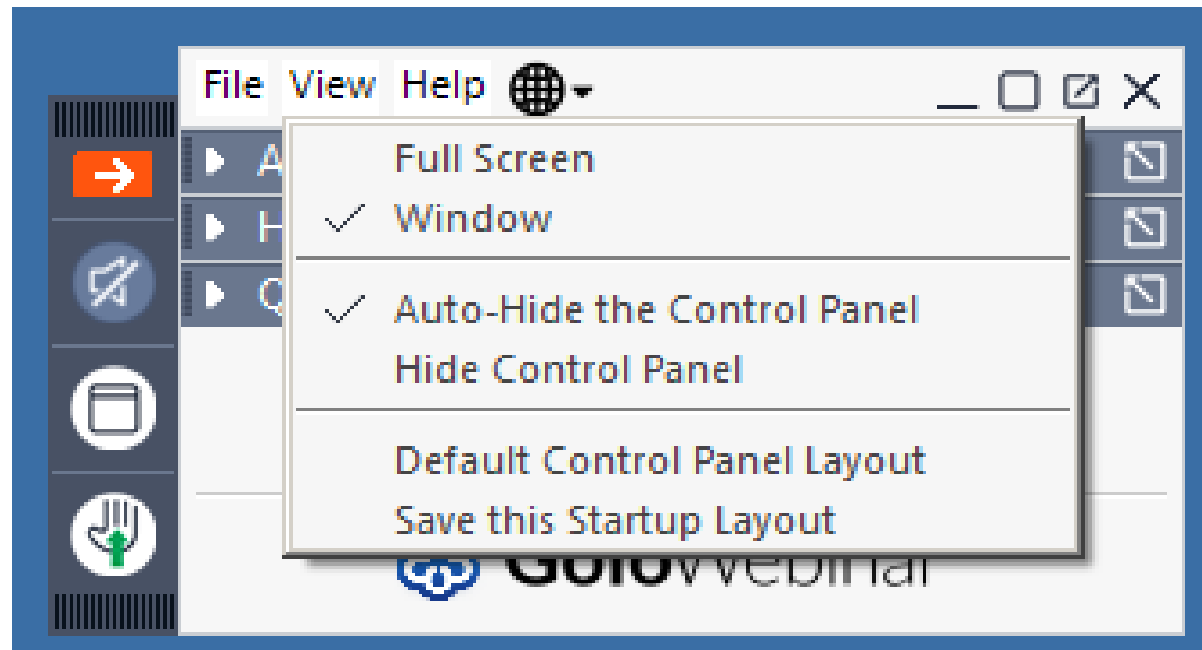


If not hidden, the Go-  
to-Webinar Control  
Panel will look  
something like this

# Using the Go-to-Webinar Interface

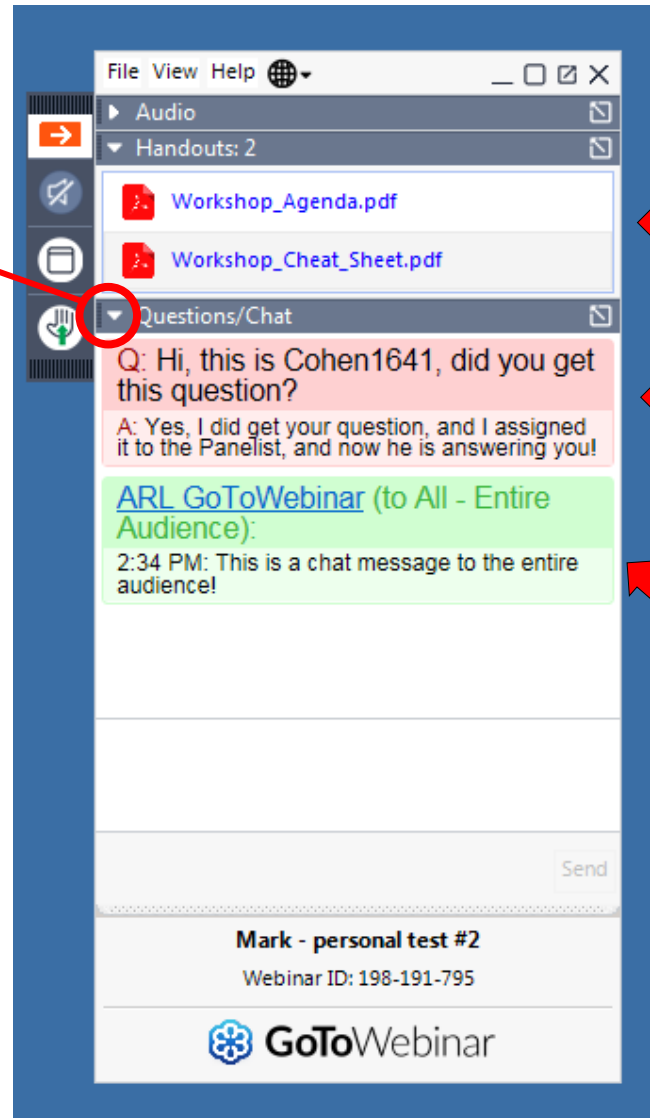
Use the View drop-down menu, for example:

- ✓ to autohide control panel or not
- ✓ to restore the basic default layout if something disappears



# Using the Go-to-Webinar Interface

By toggling the little triangle by each Control Panel section, you can expand it or contract it

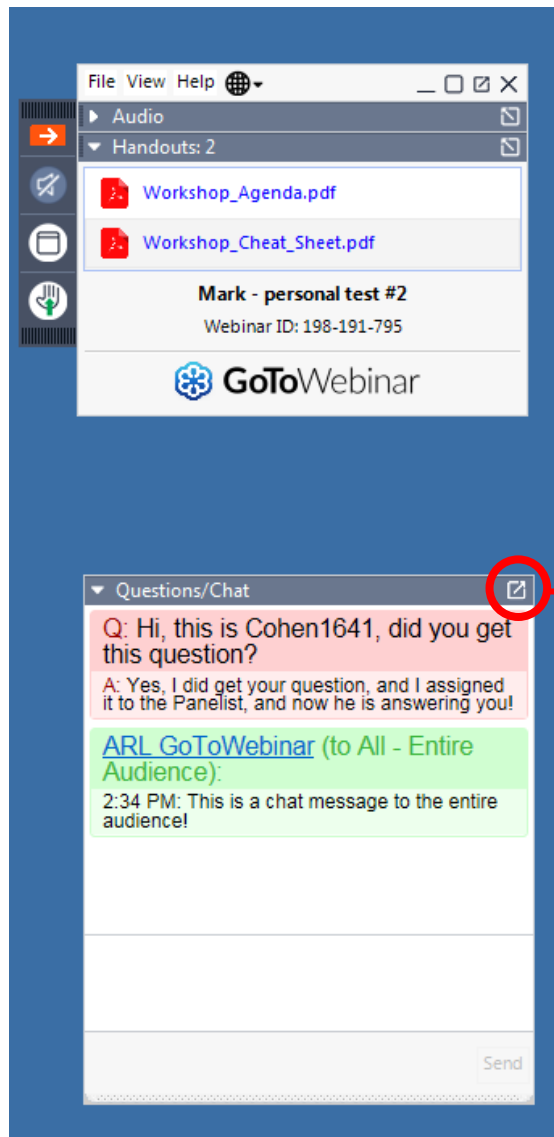


We will put important handouts in this section

When you ask questions of the staff, your questions and answers will be shown in this section

Or when the staff sends the audience a message, you will also see it here

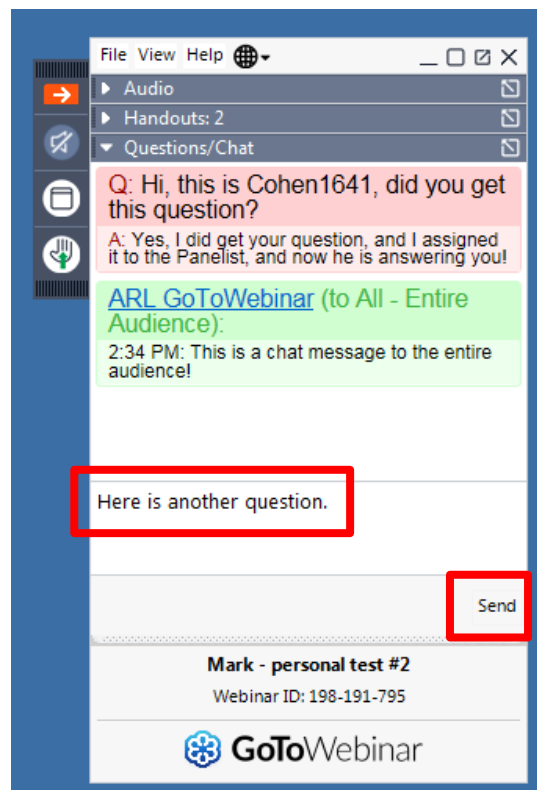
# Using the Go-to-Webinar Interface



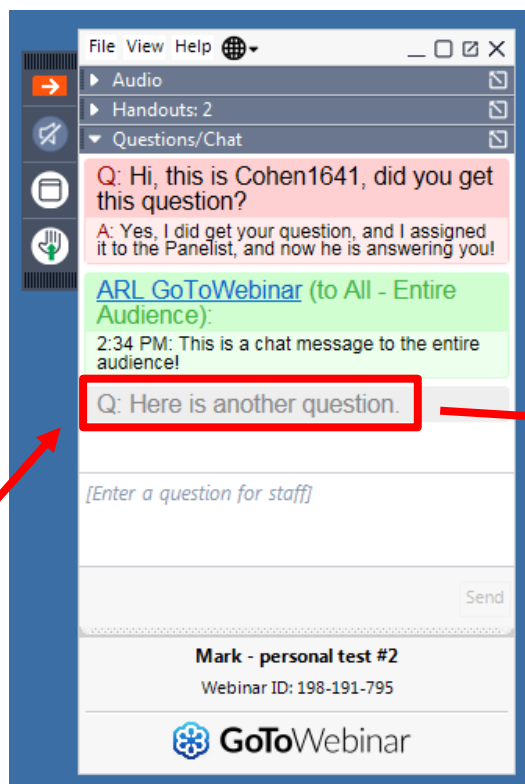
By toggling the little box in the upper right-hand corner of a given section, you can undock it or redock it



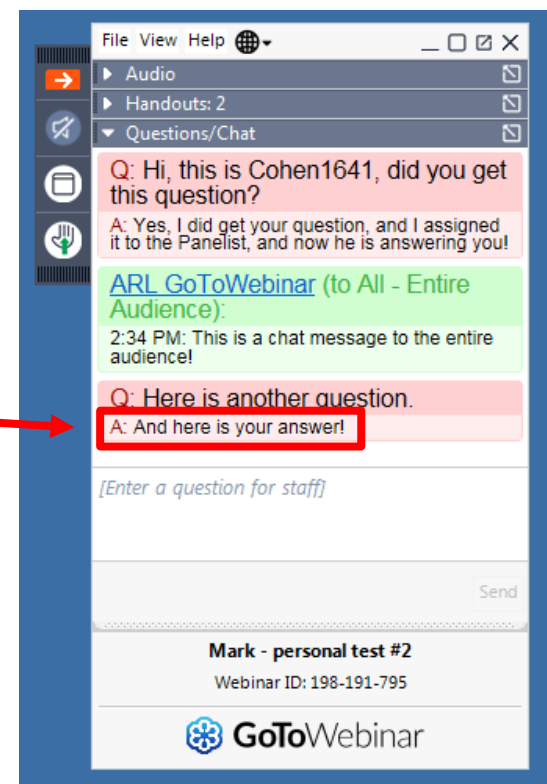
# Using the Go-to-Webinar Interface



To ask a question, you type in the empty box, and then hit "send"



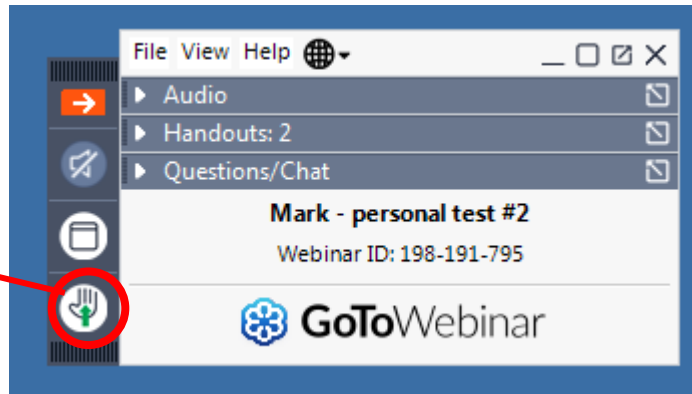
The question you asked should then show up in *your* Control Panel



When we answer it, the answer will show up in *your* Control Panel

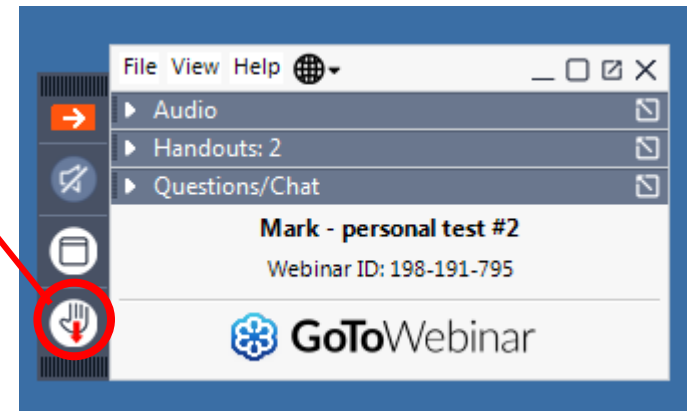
# Using the Go-to-Webinar Interface

Sometimes we will ask for a show of hands on a particular question. You click the little hand icon to raise your hand



To lower your hand, you click again on the same icon.

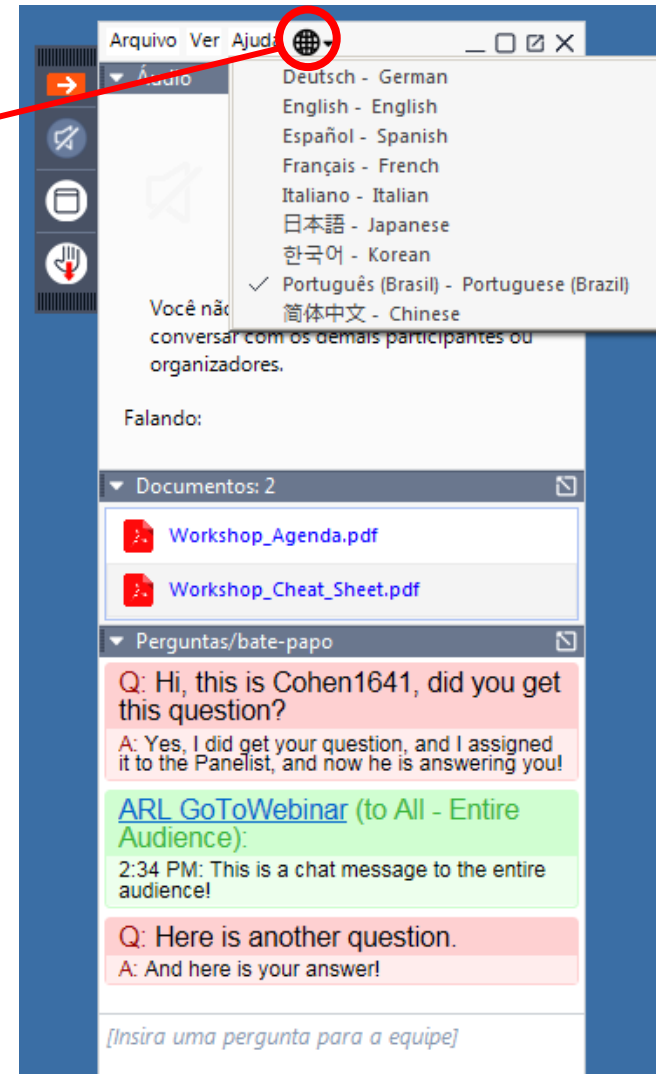
*Normally, after we get the answers, we will automatically lower everyone's hand*



*You are in listen-only mode, so you don't raise your hand to ask a question.*

# Using the Go-to-Webinar Interface

You can click on the “globe” icon to change the language of the Control Panel. Although Questions and Answers will be in English

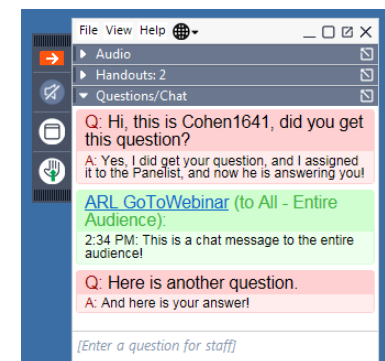


# Asking Questions during the Workshop

# Asking Questions

- Ask general questions about the Webinar or Go-to-Webinar in the Control Panel that was just discussed

*...if viewing a recording, can ask  
general questions by emailing  
[arl.gotowebinar@noaa.gov](mailto:arl.gotowebinar@noaa.gov)*



- Ask questions about HYSPLIT, the Graphical User Interface (GUI), and the Tutorial in the [HYSPLIT Forum](https://hysplitbbs.arl.noaa.gov)



**HYSPLIT Forum: [hysplitbbs.arl.noaa.gov](https://hysplitbbs.arl.noaa.gov)**  
A Forum for HYSPLIT Dispersion Model Users to Communicate Questions, Problems, and Ideas for Upgrades, etc.

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[Notifications](#) 7 [MarkCohen](#)

### 2020 HYSPLIT Workshop Questions



**Installation**  
Post questions about HYSPLIT installation.

1

3

**? Re: Failure in unzipping the ...**  
by [sonny.zinn](#)  
June 3rd, 2020, 10:33 am



**Rehearsal**  
This forum will be used by the ARL staff during rehearsals. All posts under this forum will be deleted after the rehearsals.

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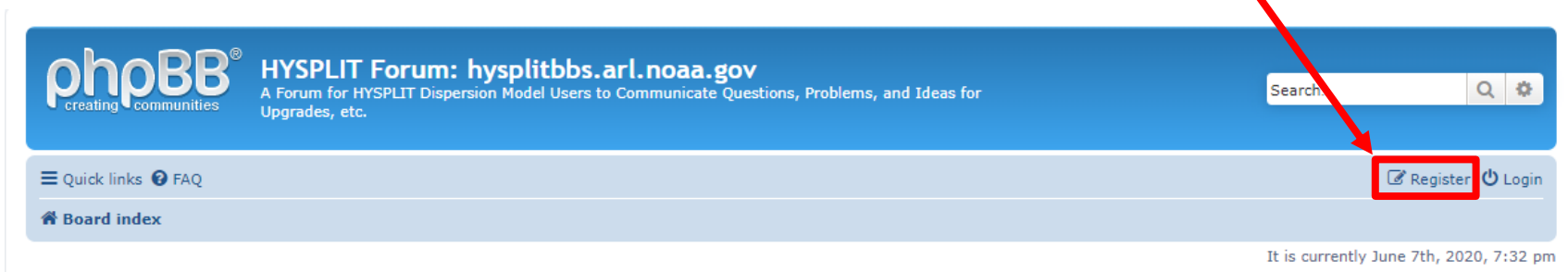
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No posts

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36>

# Asking Questions

If you have not already registered for the HYSPLIT Forum, you can do so easily by clicking on the “Register” icon at <https://hysplitbbs.arl.noaa.gov/>



The screenshot shows the top of the HYSPLIT Forum website. The header is blue and contains the phpBB logo, the forum name "HYSPLIT Forum: hysplitbbs.arl.noaa.gov", a search bar, and a "Register" button. The "Register" button is highlighted with a red box, and a red arrow points to it from the text above. Below the header is a light blue navigation bar with links for "Quick links", "FAQ", "Board index", and "Login".

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Search [input] [icon] [icon]

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[icon] Register [icon] Login

It is currently June 7th, 2020, 7:32 pm

# Asking Questions



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
It is currently June 18th, 2020, 6:36 pm

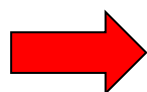
Last visit was: June 16th, 2020, 10:13 am

[Mark forums read](#)

HYSPLIT	TOPICS	POSTS	LAST POST
 <b>Users</b> General questions and postings pertaining to the use of HYSPLIT regardless of the platform. For platform specific questions, use the HYSPLIT Platform forums.	190	715	<b>Re: Meteorological Data</b> by <a href="#">barbara.stunder</a>  May 26th, 2020, 8:52 am
 <b>Developers</b> Questions and postings pertaining to the development of HYSPLIT, feature enhancements, and HYSPLIT internals. HYSPLIT source code and algorithms are discussed here.	19	70	<b>Trying to Recreate This image</b> by <a href="#">munleyj</a>  May 11th, 2020, 9:48 am
 <b>Bugs</b> Post any defects you find in the HYSPLIT software here. The HYSPLIT Developers carefully monitor this list and will work diligently to repair any reported problems. When posting a bug report, please specify both the HYSPLIT version and operating system you are using.	42	145	<b>Re: question about DATEM form...</b> by <a href="#">lida</a>  May 18th, 2020, 9:37 pm
 <b>Announce</b> Announcements pertaining to HYSPLIT, training materials, dispersion related jobs or research positions, or related software. This list is moderated and will not be used for any discussion.	25	47	<b>Re: TAPPAS</b> by <a href="#">alicecc</a>  January 27th, 2020, 12:26 pm



 <b>Radiological</b> Post questions, comments and links to research (research papers, web sites, etc) involving HYSPLIT and radiological nuclides. This section is also to facilitate collaborations between researchers involved in radiological nuclide transport and dispersion.	12	38	<b>Re: Fukushima Calculation</b> by <a href="#">ariel.stein</a>  September 20th, 2018, 9:25 am
 <b>Cluster Analysis</b> Topics about the trajectory clustering program for HYSPLIT.	31	133	<b>Re: Generate cluster trajecto...</b> by <a href="#">barbara.stunder</a>  August 26th, 2019, 7:35 am



FORUM	TOPICS	POSTS	LAST POST
 <b>HYSPLIT Workshop</b>	17	34	<b>? Re: Moderator test</b> by <a href="#">alicecc</a>  June 12th, 2020, 11:30 am

# Asking Questions



**HYSPLIT Forum: [hysplitbbs.arl.noaa.gov](https://hysplitbbs.arl.noaa.gov)**  
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



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














## HYSPLIT Workshop

Mark subforums read

FORUM	TOPICS	POSTS	LAST POST
 <b>2020 HYSPLIT Workshop Questions</b> Questions for the upcoming 2020 Online HYSPLIT Workshop.	6	11	<b>? Re: Moderator test</b> by <a href="#">alicec</a>  June 12th, 2020, 11:30 am
 <b>2019 HYSPLIT Workshop Questions</b> During the four weeks of the 2019 HYSPLIT Workshop, users will be able to post questions on the week's topics to this Forum and model developers will try to answer them as soon as possible.	3	5	<b>Re: Depositions calculated wi...</b> by <a href="#">ariel.stein</a>  June 17th, 2019, 3:58 pm

[New Topic](#)    

Mark topics read • 8 topics • Page 1 of 1


TOPICS	REPLIES	VIEWS	LAST POST
 <b>Open slots?</b> by <a href="#">tomr</a> » May 28th, 2020, 11:25 am	1	38	by <a href="#">sonny.zinn</a>  May 29th, 2020, 11:41 am
 <b>Is there any plan of tutorial or workshop in 2020?</b> by <a href="#">lida</a> » December 3rd, 2019, 3:37 am	3	1034	by <a href="#">McP82</a>  December 27th, 2019, 9:19 am
 <b>HYSPLIT Workshop in Huelva, Spain, 7-9 October, 2019</b> by <a href="#">glenn.rolph</a> » September 16th, 2019, 2:22 pm	2	2243	by <a href="#">McP82</a>  December 27th, 2019, 9:18 am
 <b>2019 HYSPLIT Workshop</b> by <a href="#">glenn.rolph</a> » February 28th, 2019, 12:08 pm	1	1644	by <a href="#">glenn.rolph</a>  April 8th, 2019, 2:27 pm
 <b>HYSPLIT Tutorial Videos</b> by <a href="#">glenn.rolph</a> » April 17th, 2018, 8:58 am	0	3825	by <a href="#">glenn.rolph</a>  April 17th, 2018, 8:58 am
 <b>2018 HYSPLIT workshop in Europe</b> by <a href="#">ariel.stein</a> » February 1st, 2018, 5:31 pm	0	3286	by <a href="#">ariel.stein</a>  February 1st, 2018, 5:31 pm
 <b>2017 HYSPLIT Workshop</b> by <a href="#">glenn.rolph</a> » March 16th, 2017, 8:28 am	2	4044	by <a href="#">glenn.rolph</a>  October 19th, 2017, 11:27 am
 <b>2016 PC HYSPLIT Workshop</b> by <a href="#">glenn.rolph</a> » February 18th, 2016, 2:09 pm	1	4086	by <a href="#">glenn.rolph</a>  March 15th, 2016, 11:43 am



# Asking Questions

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36>

You can  
post your  
question in  
the  
appropriate  
section,  
based on  
where in  
the Tutorial  
your  
question  
refers to.



**HYSPPLIT Forum: [hysplitbbs.arl.noaa.gov](https://hysplitbbs.arl.noaa.gov)**  
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


















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## 2020 HYSPPLIT Workshop Questions

[Mark subforums read](#)

FORUM	TOPICS	POSTS	LAST POST
 <b>Rehearsal</b> This forum will be used by the ARL staff during rehearsals. All posts under this forum will be deleted after the rehearsals.	1	2	<b>Re: Moderator test</b> by <a href="#">alicec</a>  June 12th, 2020, 11:30 am
 <b>1. Installing HYSPPLIT</b> Post questions about HYSPPLIT installation.	4	8	<b>? Re: Failure in unzipping the ...</b> by <a href="#">sonny.zinn</a>  June 9th, 2020, 1:45 pm
 <b>2. Testing the installation</b>	1	1	<b>? TOPIC_UNAPPROVED_FORUM</b>
 <b>3. Gridded meteorological data files</b>	0	0	No posts
 <b>4. Trajectory calculations</b>	0	0	No posts
 <b>5. Trajectory options</b>	0	0	No posts
 <b>6. Trajectory statistics</b>	0	0	No posts
 <b>7. Air concentration calculations</b>	0	0	No posts
 <b>8. Configuring the CAPTEX simulation</b>	0	0	No posts
 <b>9. Air concentration parameter sensitivity</b>	0	0	No posts
 <b>10. Alternate display options</b>	0	0	No posts
 <b>11. Pollutant transformations and deposition</b>	0	0	No posts
 <b>12. Air concentration uncertainty</b>	0	0	No posts
 <b>13. Source attribution methods</b>	0	0	No posts
 <b>14. Wildfire smoke and dust storms</b>	0	0	No posts
 <b>15. Radioactive pollutants and dose</b>	0	0	No posts
 <b>16. Volcanic eruptions with gravitational settling</b>	0	0	No posts
 <b>17. Custom simulations</b>	0	0	No posts

# Asking Questions

You can look to see if there already is a similar question, and if not, you can create a **New Topic**



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




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[Board index](#) < [HYSPLIT Workshop](#) < [2020 HYSPLIT Workshop Questions](#) < **1. Installing HYSPLIT**

## 1. Installing HYSPLIT

[New Topic](#)

[Mark topics read](#) • 4 topics • Page 1 of 1

TOPICS	REPLIES	VIEWS	LAST POST
 <b>I cannot Run Hysplit after following the installation</b> by Cares » June 18th, 2020, 12:30 pm	1	3	by <a href="#">MarkCohen</a>  June 18th, 2020, 6:57 pm
 <b>Desktop icon Run Hysplit not working ?</b> by Claudia_Rivera » June 18th, 2020, 2:01 pm	0	0	by <a href="#">Claudia_Rivera</a>  June 18th, 2020, 2:01 pm
 <b>Failure in unzipping the contents of 'Tutorial.zip'</b> by flaviavieira » June 2nd, 2020, 10:02 am	3	300	by <a href="#">sonny.zinn</a>  June 9th, 2020, 1:45 pm
 <b>tutorial/index.html not working</b> by kschwager » May 28th, 2020, 8:58 am	1	57	by <a href="#">sonny.zinn</a>  May 29th, 2020, 11:48 am

[New Topic](#)


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# Asking Questions

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## 1. Installing HYSPLIT

POST A NEW TOPIC

Subject:

**Add your question text in this box.**

**Please avoid putting any links in your post.**

**Do not start any line with two dashes "--"**

Smilies

BBCode is ON  
[img] is ON  
[flash] is OFF  
[url] is ON  
Smilies are ON

Save draft Preview Submit

Options Attachments Poll creation

☐ Disable BBCode  
☐ Disable smilies  
☐ Do not automatically parse URLs  
☒ Attach a signature (signatures can be altered via the UCP)  
☐ Notify me when a reply is posted  
☐ Lock topic

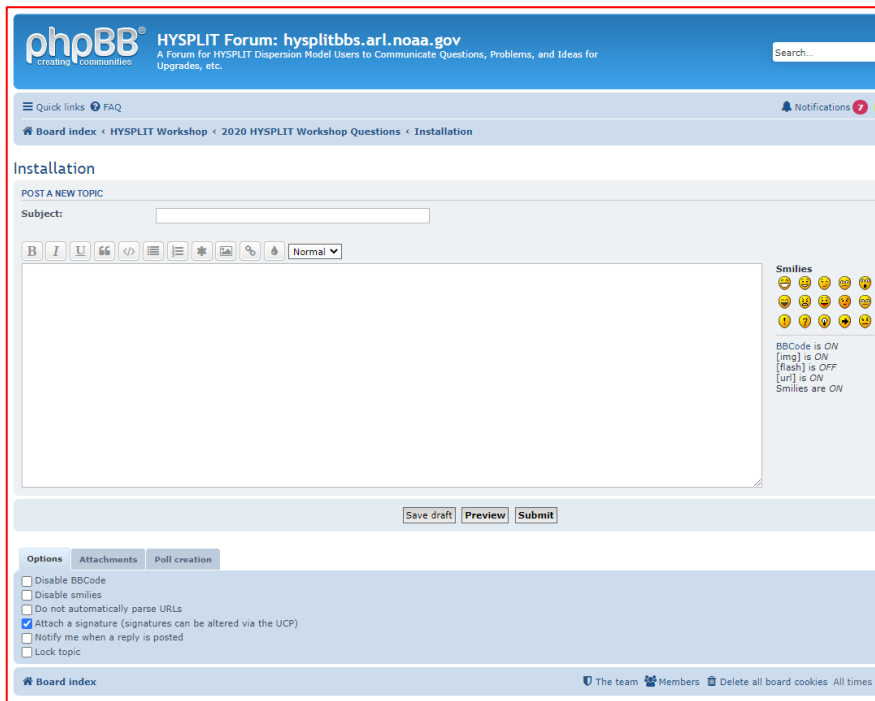
Board index The team Members Delete all board cookies All times are UTC-04:00

you can add attachments, e.g., one or more screen shots, and/or a CONTROL file and/or a SETUP.CFG file

Once you submit your post, it can be approved and then answered by ARL staff

# Asking Questions

Why are we asking to use the HYSPLIT Forum for GUI and model-related questions?




- You can ask more detailed questions, e.g., can attach screen shots and/or various input/output files
- We can provide more detailed answers
- There can be an exchange back and forth, if needed
- Can see other questions that have already been asked – in case you have a similar question
- We can give you a link to the answer to a similar question
- Accessible to people just viewing the recordings
- As part of the HYSPLIT community, we hope you will use the Forum moving forward

# Asking Questions

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36>

You can post your question in the appropriate section, based on where in the Tutorial your question refers to.



**HYSPLIT Forum: [hysplitbbs.arl.noaa.gov](https://hysplitbbs.arl.noaa.gov)**  
A Forum for HYSPLIT Dispersion Model Users to Communicate Questions, Problems, and Ideas for Upgrades, etc.





















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## 2020 HYSPLIT Workshop Questions

[Mark subforums read](#)

FORUM	TOPICS	POSTS	LAST POST
 <b>Rehearsal</b> This forum will be used by the ARL staff during rehearsals. All posts under this forum will be deleted after the rehearsals.	1	2	<b>Re: Moderator test</b> by <a href="#">alicec</a>  June 12th, 2020, 11:30 am
 <b>1. Installing HYSPLIT</b> Post questions about HYSPLIT installation.	4	8	<b>? Re: Failure in unzipping the ...</b> by <a href="#">sonny.zinn</a>  June 9th, 2020, 1:45 pm
 <b>2. Testing the installation</b>	1	1	<b>? TOPIC_UNAPPROVED_FORUM</b>
 <b>3. Gridded meteorological data files</b>	0	0	No posts
 <b>4. Trajectory calculations</b>	0	0	No posts
 <b>5. Trajectory options</b>	0	0	No posts
 <b>6. Trajectory statistics</b>	0	0	No posts
 <b>7. Air concentration calculations</b>	0	0	No posts
 <b>8. Configuring the CAPTEX simulation</b>	0	0	No posts
 <b>9. Air concentration parameter sensitivity</b>	0	0	No posts
 <b>10. Alternate display options</b>	0	0	No posts
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 <b>12. Air concentration uncertainty</b>	0	0	No posts
 <b>13. Source attribution methods</b>	0	0	No posts
 <b>14. Wildfire smoke and dust storms</b>	0	0	No posts
 <b>15. Radioactive pollutants and dose</b>	0	0	No posts
 <b>16. Volcanic eruptions with gravitational settling</b>	0	0	No posts
 <b>17. Custom simulations</b>	0	0	No posts

# Asking Questions

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=46>



hysplitbbs.arl.noaa.gov/viewforum.php?f=46

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Quick links: FAQ MCP

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**9. Air concentration parameter sensitivity**

New Topic Search this forum...

TOPICS	REPLIES	VIEWS	LAST POST
How to Retrieve Captex Control & Setup Files? by RickV » June 23rd, 2020, 1:39 pm	3	29	by Tianfeng.Chai June 23rd, 2020, 2:09 pm

Mark topics read • 1 topic • Page 1 of 1

# Asking Questions

hysplitbbs.arl.noaa.gov/viewtopic.php?f=46&t=1898

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## How to Retrieve Captex Control & Setup Files?

Post Reply Search this topic...

First unread post • 4 posts • Page 1 of 1

**Re: How to Retrieve Captex Control & Setup Files?**  
by Tianfeng.Chai » June 23rd, 2020, 2:09 pm

Did you retrieve "Setup file" as well?  
It should be retrieved from "Advanced"/"Configuration Setup"/"Concentration" menu.

**Re: How to Retrieve Captex Control & Setup Files?**  
by RickV » June 23rd, 2020, 2:08 pm

Your references are correct. I completed Section 8 correctly and saved both captex files (i.e., these reside in the working directory). However, my efforts to execute these instructions have caused the Wish Application to stop working twice. When this occurs HYSPLIT shuts down. With this in mind I have been unable to proceed beyond attempting to load the control file. Can you advise me to circumvent this problem?

**Re: How to Retrieve Captex Control & Setup Files?**  
by Tianfeng.Chai » June 23rd, 2020, 2:01 pm

I believe you are referring to the following instruction in Section 9.1.

"First press the center Reset button on the main GUI to clear all previous changes and then retrieve captex\_control.txt into the Setup Run menu and captex\_setup.txt into the Concentration Configuration menu"

You should have "captex\_control.txt" and "captex\_setup.txt" saved when you followed Section 8.  
Otherwise you can use "captex2\_control.txt" and "captex2\_setup.txt" in the downloaded and unzipped Tutorial/captex directory.

To retrieve Control file, go to "Concentration" / "Setup Run" menu, press "Retrieve" to enter the Path/Name of the control file (or use "Browse" function there).

To retrieve Setup file, go to "Advanced"/"Configuration Setup"/"Concentration", you can find "Retrieve" button at the bottom as well.

**How to Retrieve Captex Control & Setup Files?**  
by RickV » June 23rd, 2020, 1:39 pm

The instructions for these processes seem vague in the tutorial.html file. Can you elaborate?

Edit - This may be straightforward. I pressed "Retrieve" and "Retrieve Previously Saved Simulation" dialog opens prompting user for CONTROL file first. Perhaps "Setup" file prompt comes second.

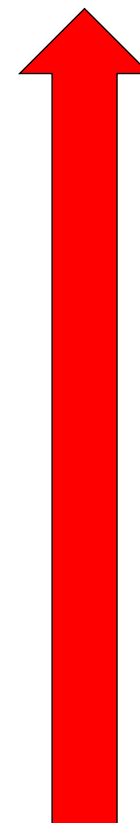
Regardless, my attempt to retrieve control file resulted in the Fatal Error: alloc: could not allocate 800 new objects. Why? I did press "reset" in the main GUI beforehand.

**Tianfeng.Chai**  
Posts: 7  
Joined: September 18th, 2017, 2:20 pm  
Registered HYSPLIT User: No

**RickV**  
Posts: 9  
Joined: June 21st, 2020, 2:47 pm  
Registered HYSPLIT User: Yes

**Tianfeng.Chai**  
Posts: 7  
Joined: September 18th, 2017, 2:20 pm  
Registered HYSPLIT User: No

**RickV**  
Posts: 9  
Joined: June 21st, 2020, 2:47 pm  
Registered HYSPLIT User: Yes



# Asking Questions



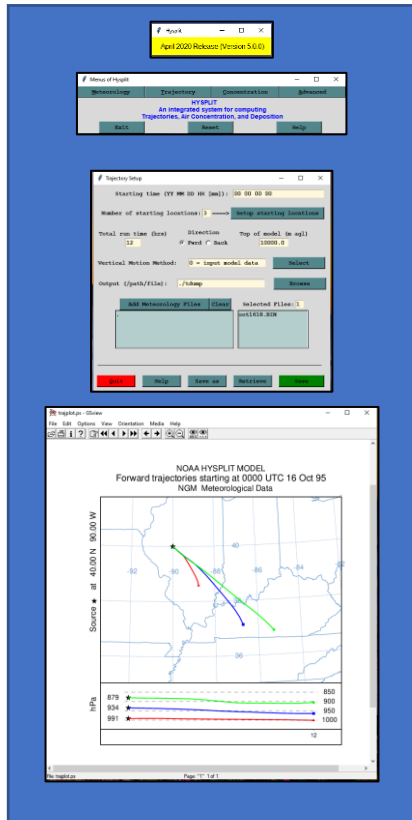
<https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=3&t=1261&p=3529&hilit=permission+to+delete#p3529>



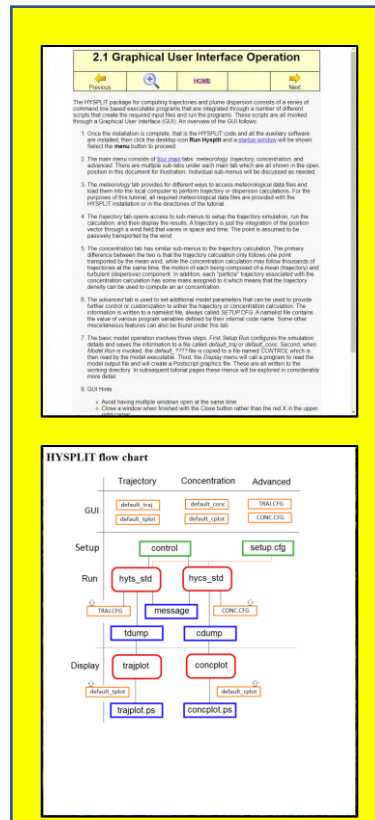
# Screen Considerations

# Screen Considerations

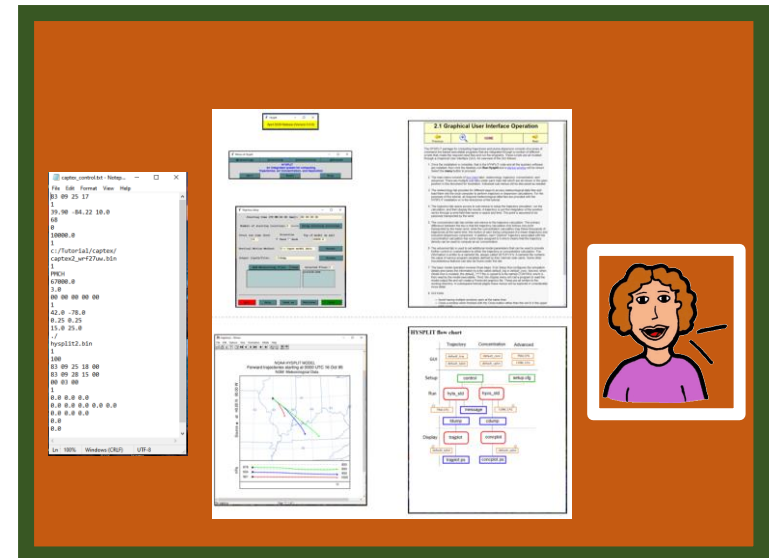
Screen area devoted to your *own* hands-on HYSPLIT modeling



Screen area devoted to your *own* viewing of Tutorial



Screen area devoted to viewing the Webinar



*We recommend that a 2nd screen be used, if this is possible, e.g., to display the Workshop Webinar video. In this way, the participant can carry out their hands-on HYSPLIT work, in conjunction with the Workshop, and still conveniently view the ongoing, associated instructions.*

# Recordings

# Recordings

Access recordings from the Workshop Web Page:  
[https://www.ready.noaa.gov/register/HYSPLIT\\_hyagenda.php](https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php)

- ❑ Recordings of each day's on-line sessions are being created, *but processing takes significant time (~8+ hours after a day's session ends)*
- ❑ Two identical versions:
  - [HYSPLIT Workshop Channel](#) (hosted by Go-to-Webinar)
    - Click Video > Go-to-Webinar registration > Enter name & email > View video
  - [Workshop Web Page](#) – once the video is posted on our site, the corresponding item in the list below will turn into a link you can click to view
    - [Day 1 video recording](#)
    - Placeholder for Day 2 video recording
    - Placeholder for Day 3 video recording
    - Placeholder for Day 4 video recording

# Recordings

## HYSPLIT Workshop Channel

hosted by Go-to-Webinar

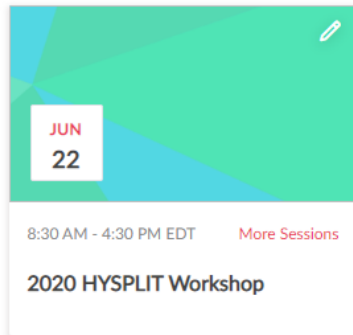
### HYSPLIT Workshop

Recordings from each day of the Online 2020 HYSPLIT Workshop, held June 22-25, 2020.

Share this page

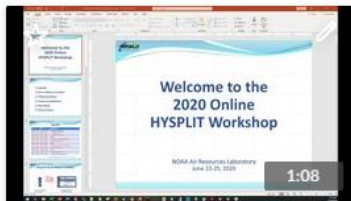


### Live / Upcoming



While video is processing, it will show up in “Live/Upcoming” section. It cannot be viewed yet.

### Recently Added



Once it is ready for viewing, it will show up in “Recently Added” section.

# Virtual Posters

# Virtual Posters

Access posters from the Workshop Web Page:  
[https://www.ready.noaa.gov/register/HYSPLIT\\_hyagenda.php](https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php)

- ❑ Ryan, R., K. Kelleher, N. Murphy, and C. Burbidge, 2020: The use of HYSPLIT by the Environmental Protection Agency (Ireland) to predict the transportation of smoke and Cs-137 from wildfires near the Chernobyl Nuclear Power Plant.
- ❑ Ionov, D., 2020: Application of HYSPLIT to simulate urban pollution plume generated by the megacity of St. Petersburg, Russia.
- ❑ Baraldo, F. and Coauthors, 2020: PM 2.5 chemical composition in Buenos Aires by an ensemble of analytical techniques.
- ❑ Diemoz, H., T. Magri, G. Pession, C. Tarricone, I. Tombolato, and M. Zublena, 2020: Applications of backtrajectory analyses at the Alpine site of Aosta, Italy.
- ❑ Preciado, M., E. Solarte, A. Pena, and C. Galindez, 2020: Monitoring the behavior of atmospheric aerosols during a biomass burning event.

# Schedules for each day of the Workshop



# Agenda – Day 1

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Introduction and logistics
12:45 – 13:30	08:45 – 09:30	1. Installing HYSPLIT
13:30 – 14:15	09:30 – 10:15	2. Testing the installation
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 15:15	10:30 – 11:15	3. Gridded meteorological data sets
15:15 – 16:00	11:15 – 12:00	4. Trajectory calculations
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 17:45	13:00 – 13:45	4. Trajectory calculations (continued)
17:45 – 19:00	13:45 – 15:00	5. Trajectory options
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:20	15:15 – 16:20	6. Trajectory statistics
20:20 – 20:30	16:20 – 16:30	First day wrap-up / questions

Note: all times are approximate

# Agenda – Day 2

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:15	08:45 – 10:15	7. Air Concentration Calculations
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 15:30	10:30 – 11:30	8. Configuring the CAPTEX simulation
15:30 – 16:30	11:30 – 12:30	Break
16:30 – 17:00	12:30 – 13:00	8. Configuring the CAPTEX simulation (continued)
17:00 – 18:30	13:00 – 14:30	9. Air Concentration Parameter Sensitivity
18:30 – 18:45	14:30 – 14:45	Break
18:45 – 19:30	14:45 – 15:30	10. Alternate Display Options
19:30 – 20:20	15:30 – 16:20	11. Pollutant Transformations and deposition <i>(start this section if time permits)</i>
20:20 – 20:30	16:20 – 16:30	Second day wrap-up / questions

Note: all times are approximate

# Agenda – Day 3

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:15	08:45 – 10:15	11. Pollutant Transformations and deposition
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	12. Air Concentration Uncertainty
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 19:00	13:00 – 15:00	13. Source Attribution Methods
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:20	15:15 – 16:20	14. Wildfire Smoke and Dust Storms
20:20 – 20:30	16:20 – 16:30	Third day wrap-up / questions

Note: all times are approximate


# Agenda – Day 4

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:05	08:45 – 10:05	15. Radioactive Pollutants and Dose
14:05 – 14:15	10:05 – 10:15	<b>** Special Presentation:</b> <i>An overview of the HySPLIT applications from NCSR Demokritos.</i> Athanasios Sfetsos, NCSR Demokritos, Greece
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	16. Volcanic Eruptions with Gravitational Settling
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 18:00	13:00 – 14:00	17. Custom Simulations (Chris Loughner, NOAA ARL, will present section 17.5)
18:00 – 19:00	14:00 – 15:00	<b>** Special Presentation:</b> <i>STILT Demonstration</i> Derek Mallia, University of Utah, United States
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:30	15:15 – 16:30	Questions from Attendees for Roland Draxler

Note: all times are approximate

# Other Topics

# **A little bit more about the READY site**



# Air Resources Laboratory

Advancing Atmospheric Science and Technology through Research

[ARL Home](#)
[HYSPLIT Model](#)
[READY >>](#)

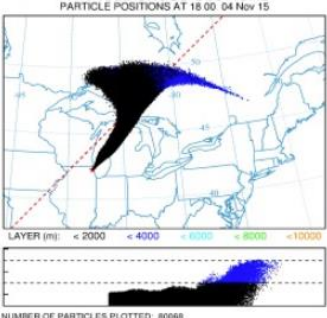
- READY News
- Transport & Dispersion
  - Get/Run HYSPLIT
  - HYSPLIT Tutorials
  - HYSPLIT Forum
  - HYSPLIT Workshop
  - Volcanic Ash
  - Fukushima TCM
  - Short-Range Ensemble Dispersion Forecasts
  - Balloon Flight Forecasting Tools
  - Locusts
  - DATM Tracer Verification
  - HYSPLIT Modeling Group
- Current & Forecast Meteorology
  - North America
  - Animations
- Archived Meteorology
  - North America
- Air Quality
  - U.S Trajectories
  - Smoke Forecast Verification
- Emergency Assistance
  - RSMC Products
  - RSMC Information
  - Internal Use Only
  - Experimental TCMs (NOAA User, Reg. User)
- READY Status
- READY Tools
- Forecast Data Information

## READY Real-time Environmental Applications and Display sYstem

READY (*Real-time Environmental Applications and Display sYstem*) has been developed to allow users to access and display meteorological data products and to run the HYSPLIT transport and dispersion model on the NOAA Air Resources Laboratory's (ARL) web server. READY brings together dispersion models, meteorological display programs and textual weather forecast programs generated over many years at ARL into a form that is easy to use by anyone. Its primary user group, however, is atmospheric scientists.

A research paper providing an overview of READY titled "*Real-time Environmental Applications and Display sYstem: READY*" [is](#) now available. Any research papers published using READY products should include a reference to this paper.

### HYSPLIT Transport & Dispersion Model

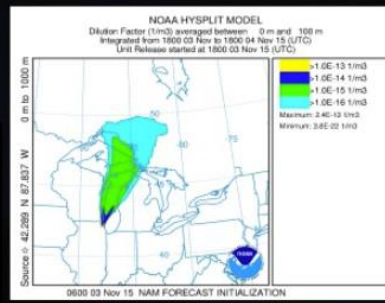


NOAA HYSPLIT MODEL  
PARTICLE CROSS-SECTIONS  
PARTICLE POSITIONS AT 18:00:04 Nov 15

LAYER (m): < 2000 < 4000 < 6000 < 8000 < 10000

Height AGL (m): 0 1000 2000 3000 4000 5000

NUMBER OF PARTICLES PLOTTED: 40000



NOAA HYSPLIT MODEL  
Smoke Forecast  
Integrated from 1800:03 Nov to 1800:04 Nov 15 (UTC)  
Unit Release started at 1800:03 Nov 15 (UTC)

Source: 42.289 N, 87.837 W

0600:03 Nov 15 NAM FORECAST INITIALIZATION

Maximum: 0.40:12 kmh  
Minimum: 0.00:02 kmh


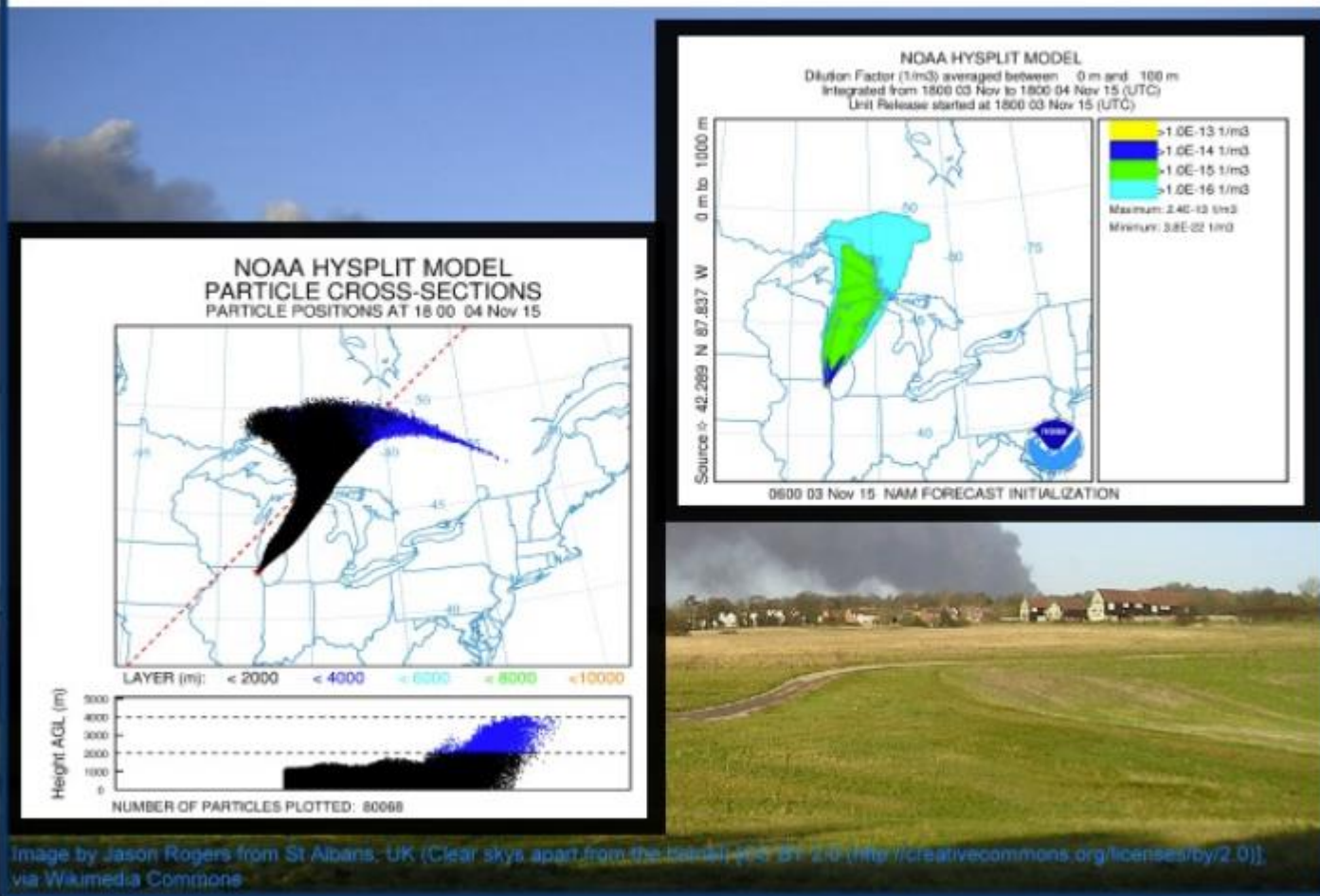


Image by Jason Rogers from St Albans, UK (Clear sky apart from the model) 2015 BY 2.0 (<https://creativecommons.org/licenses/by/2.0/>) via Wikimedia Commons

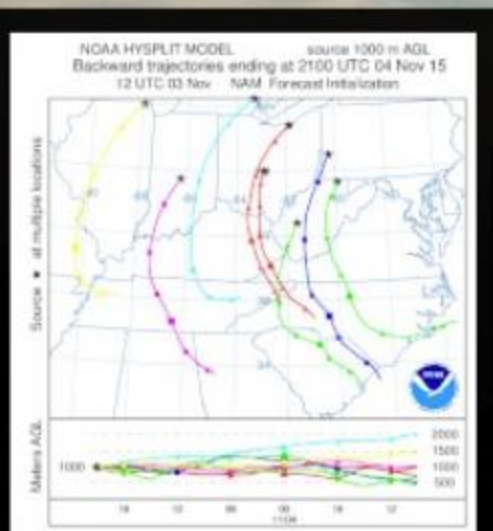


# HYSPLIT Transport & Dispersion Model

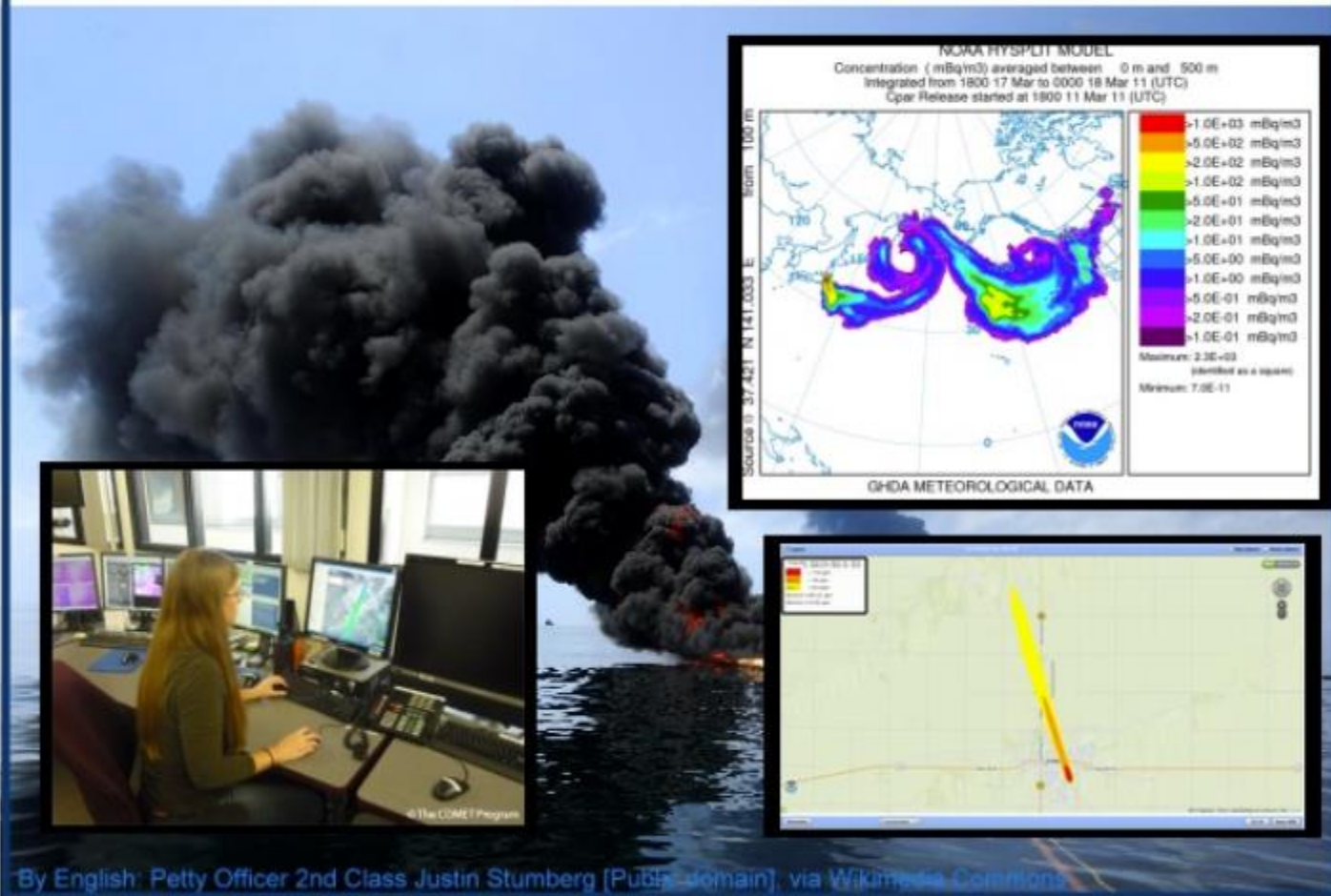




## Air Quality Products



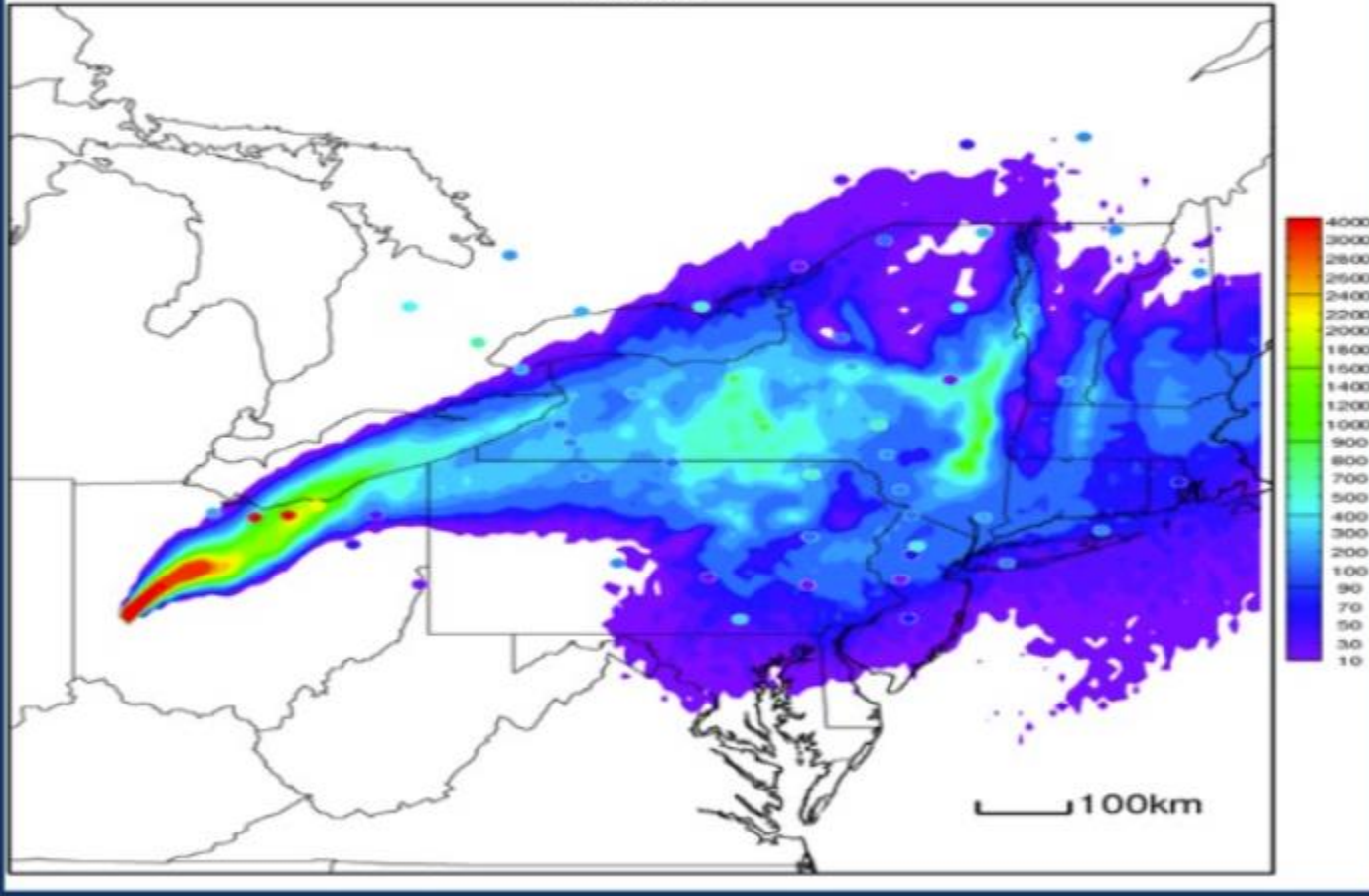
## Emergency Assistance



## DATEM Tracer Verification

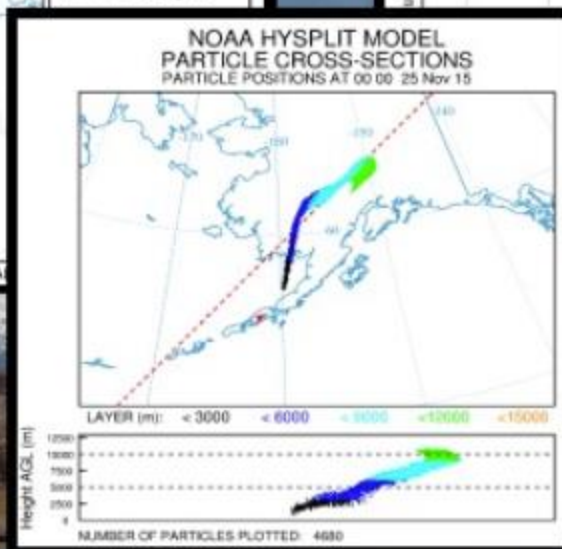
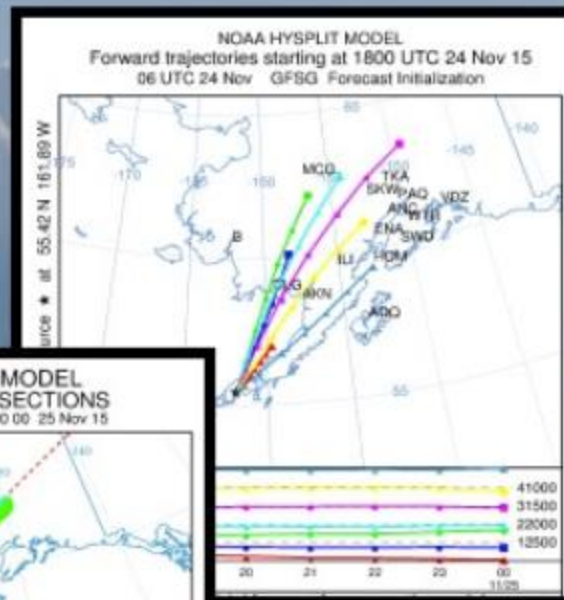
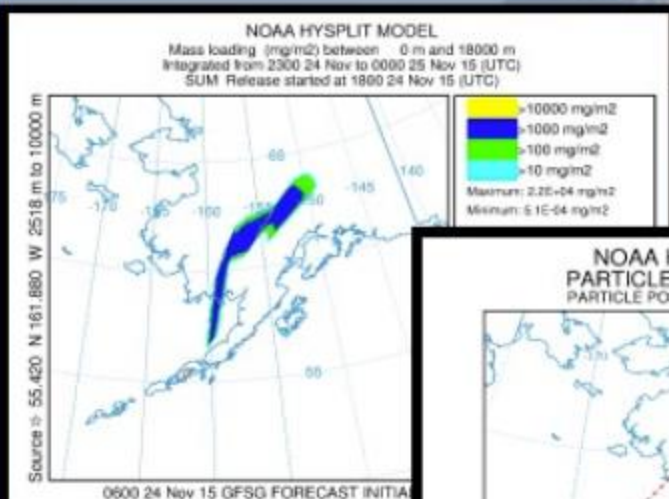


captex2



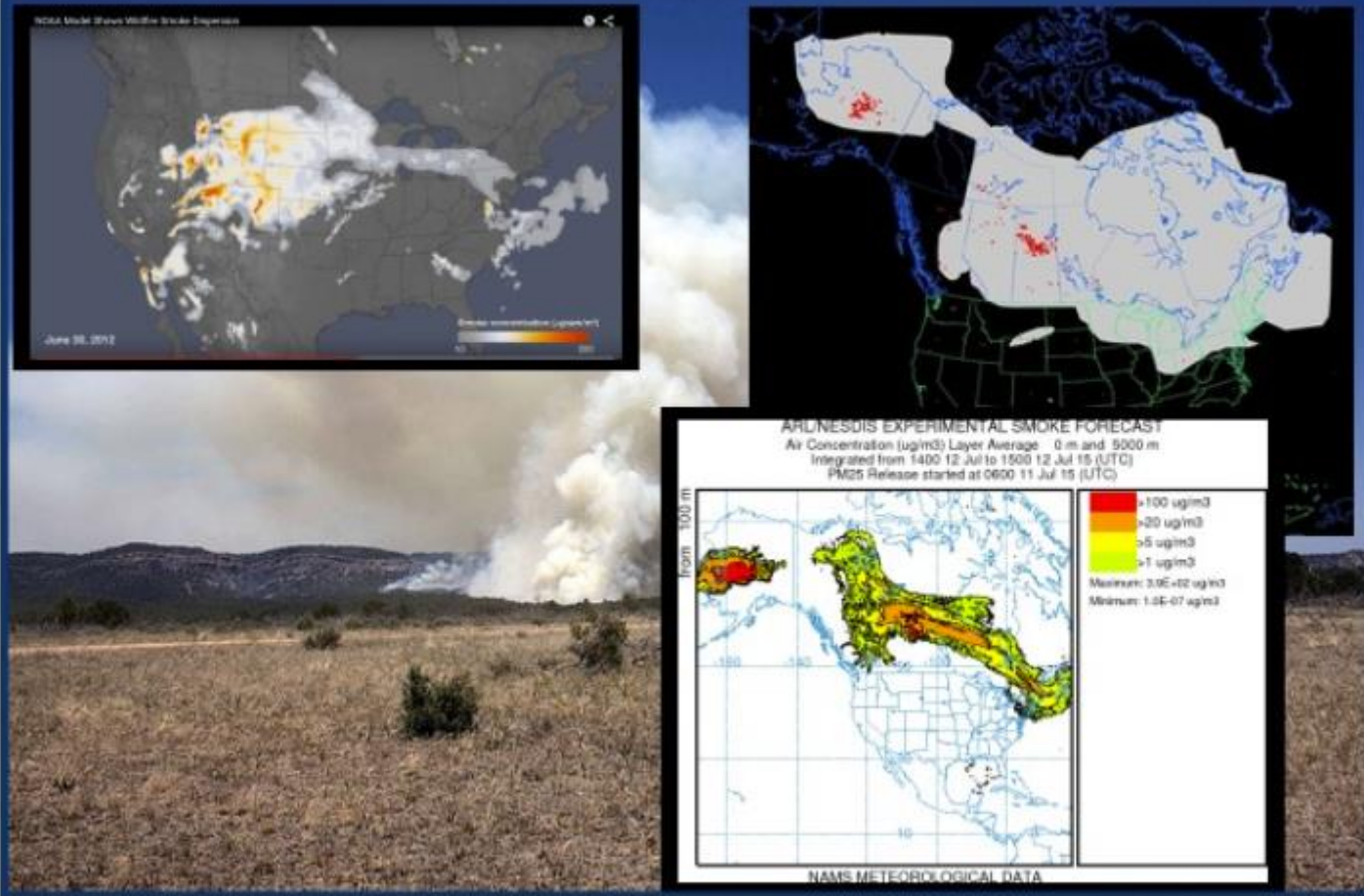


# HYSPLIT Volcanic Ash

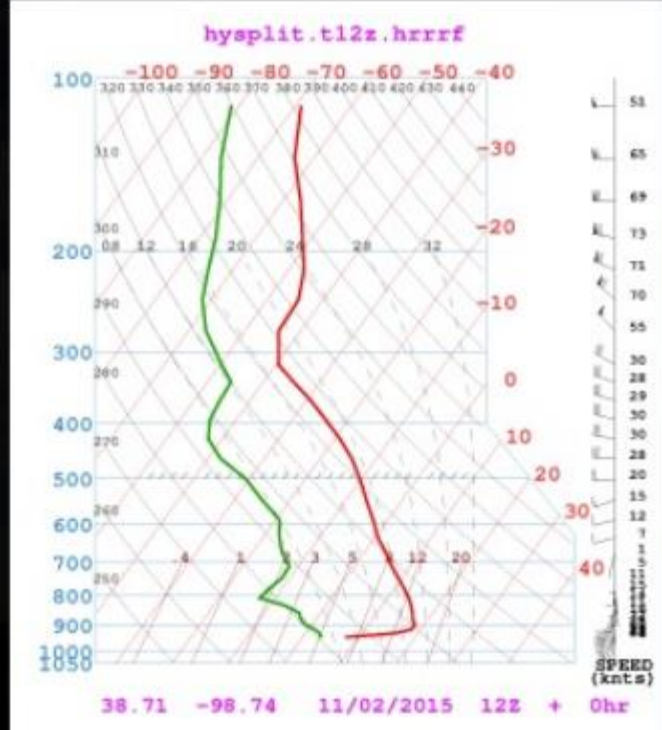
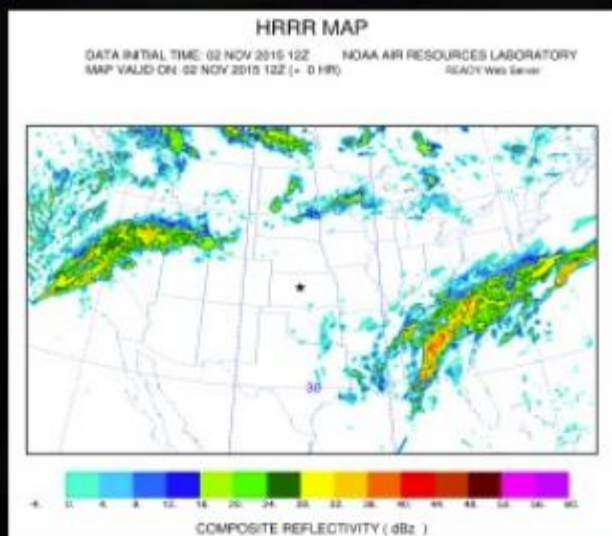


By Boarworm (Own work) [GFDL, BY-SA] from https://commons.wikimedia.org/w/index.php?curid=141414

## Wildfire Smoke Forecasting

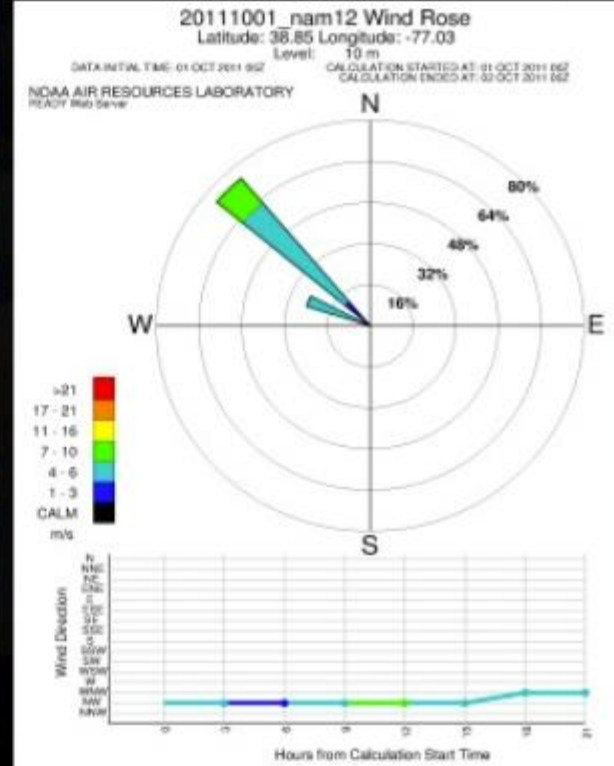
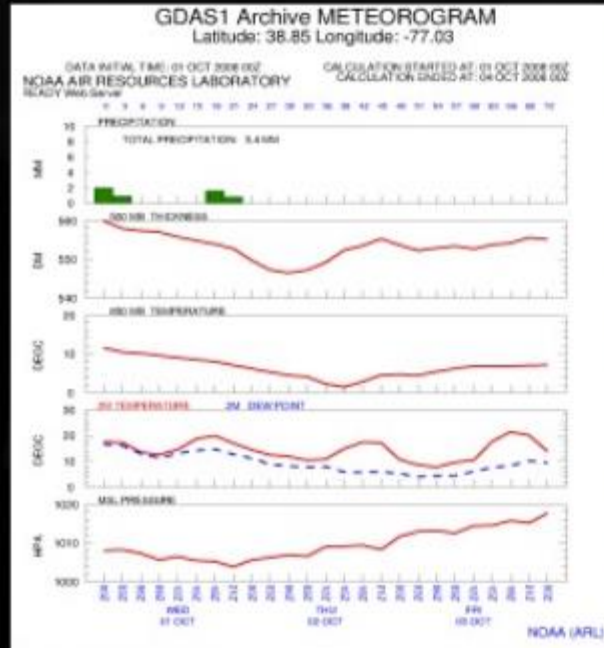


## Current & Forecast Meteorology





## Archived Meteorology



**What height should you start a back-trajectory from, if you are trying to see where air masses impacting a given measurement came from?**



# What height should you start a back-trajectory at?

## CASE 1:

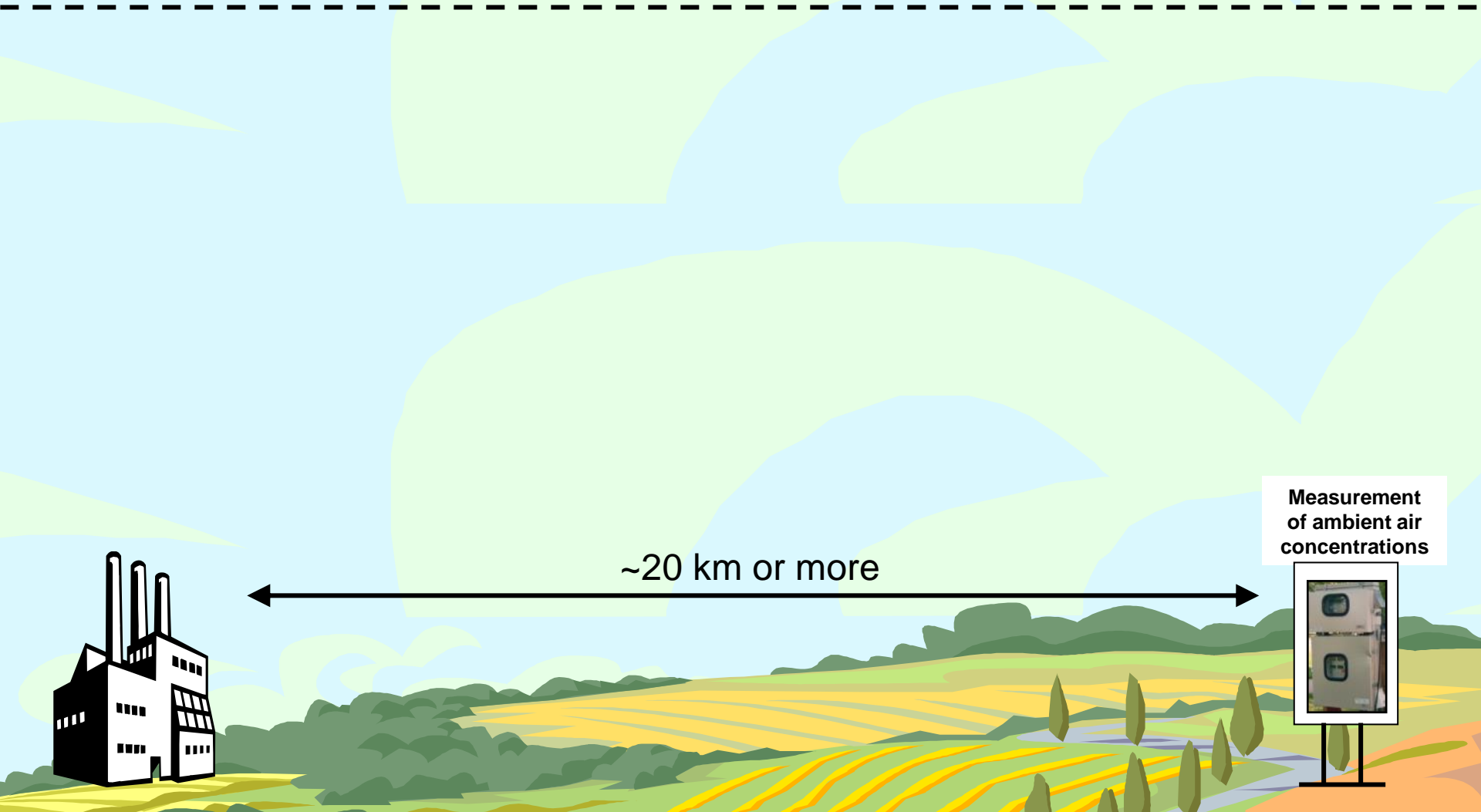
- relatively simple terrain
- at least ~20 km or more away from any major sources

## CASE 2:

- at the top of a relatively isolated mountain

## CASE 1:

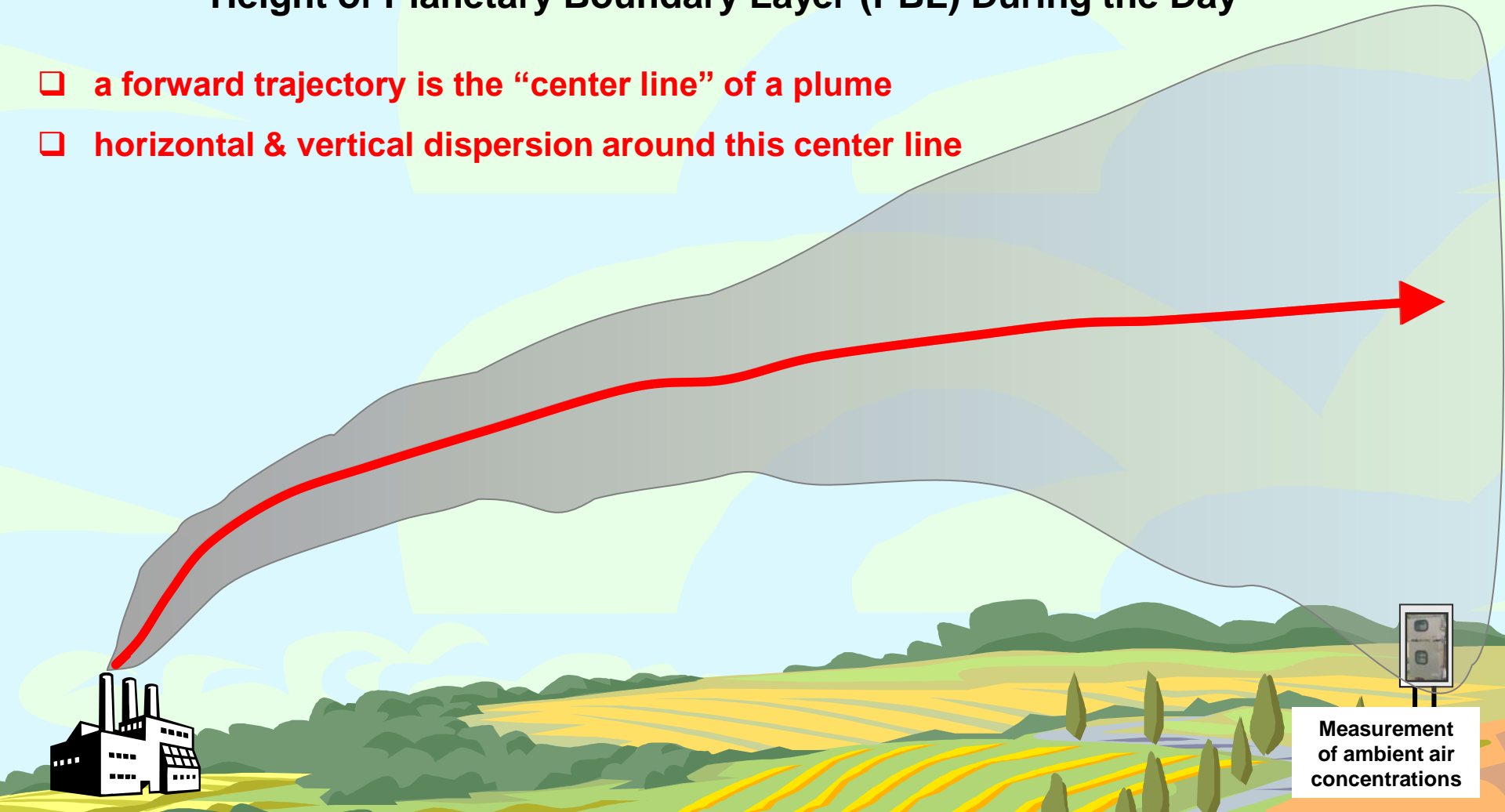
- relatively simple terrain
- at least ~20 km or more away from any major sources



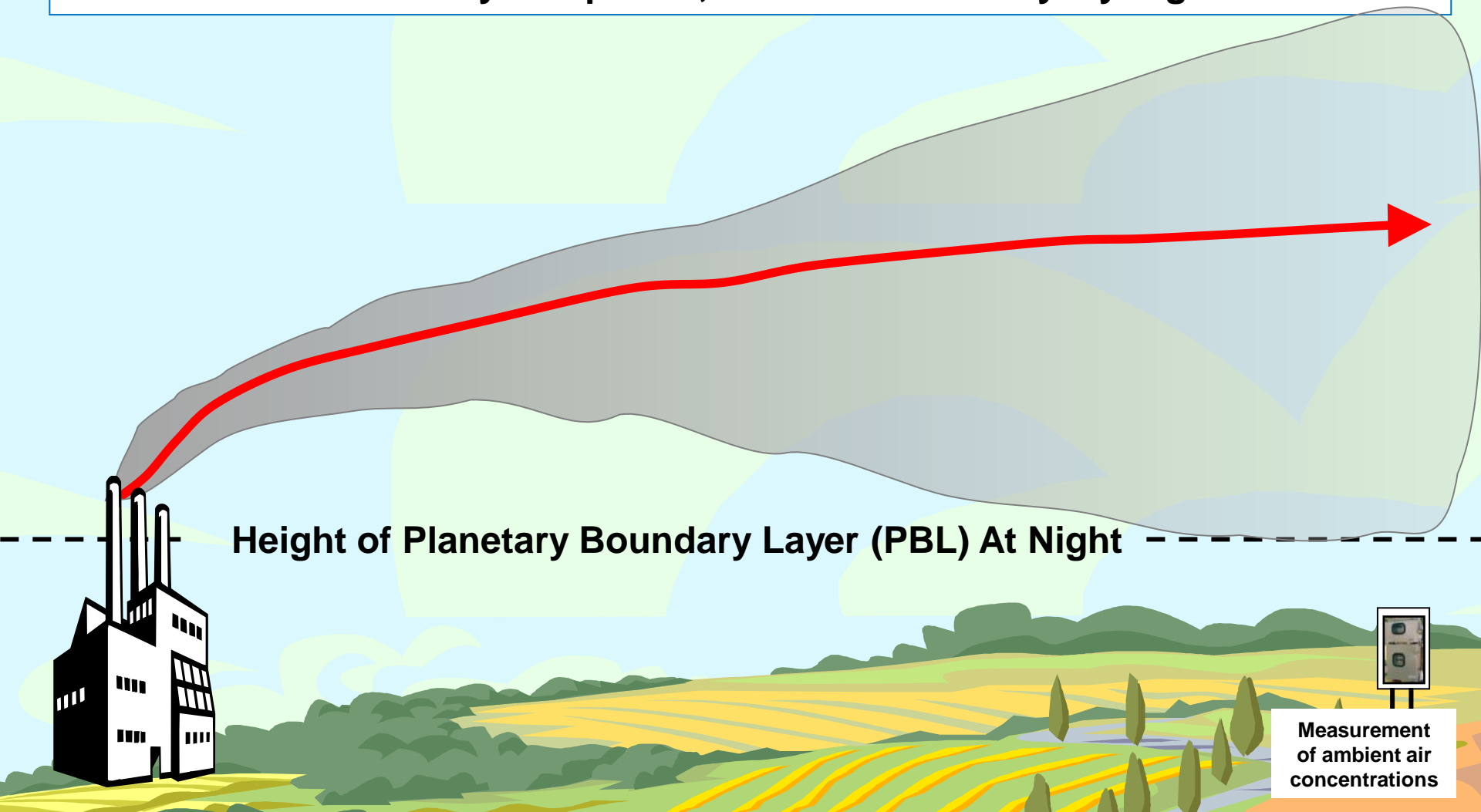
Greater than ~20km from the source,  
if the forward trajectory from the source is within the PBL,  
then the source can impact the measurement site,  
even if the trajectory endpoint near the site is not at the height of the sampler...  
This is because the PBL is relatively well-mixed during the day.

## ----- Height of Planetary Boundary Layer (PBL) During the Day -----

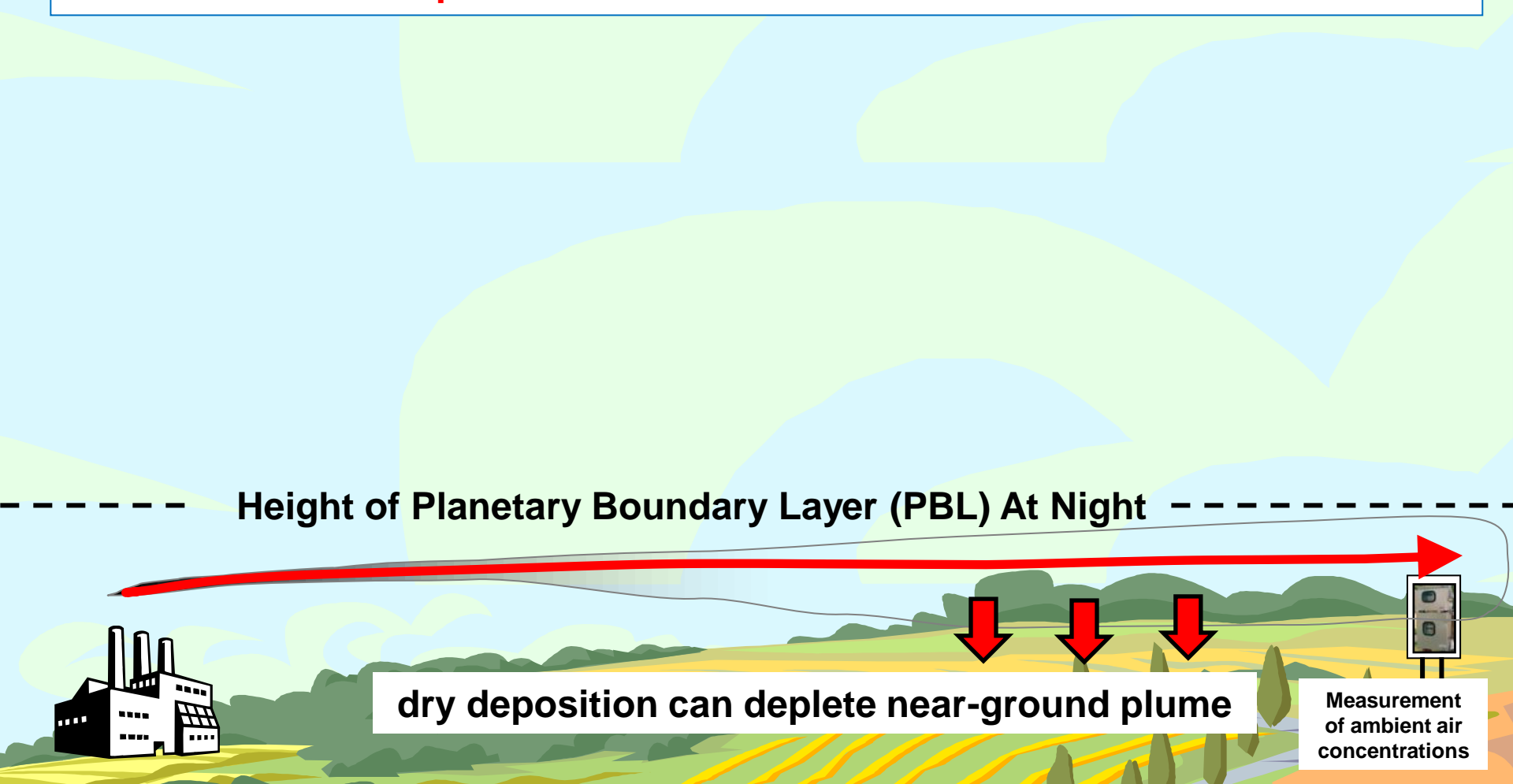
- ❑ a forward trajectory is the “center line” of a plume
- ❑ horizontal & vertical dispersion around this center line



- ❑ At night, the Planetary Boundary Layer (PBL) is generally much shallower
- ❑ Emissions from an elevated stack *may* be emitted above the PBL
- ❑ In this case, there *may* be little impact on a ground-based measurement site until the next daytime period, when the boundary layer grows.



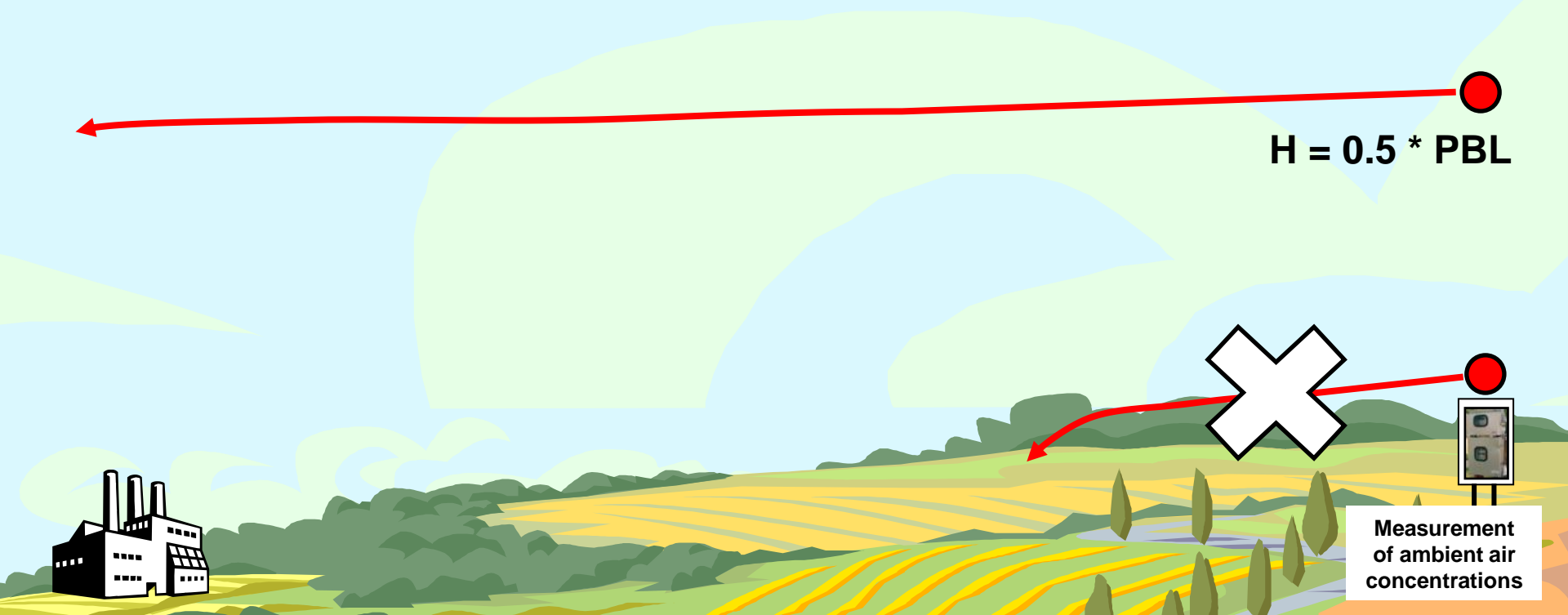
- ❑ At night, the Planetary Boundary Layer (PBL) is generally much shallower
- ❑ Emissions from a relatively low stack may be emitted within the PBL
- ❑ Note, if the pollutant dry deposits relatively rapidly, by the time the plume reaches the receptor, there may be little pollutant left... **Back-trajectories do not include deposition!**



- ❑ What are the implications of these ideas for back-trajectories?
- ❑ What HEIGHT should one start a back-trajectory?
- ❑ If you start very low to the ground, e.g., at the sampler height, the trajectories often hit the ground... This may not give a representative back-trajectory
- ❑ “best” starting height for back-trajectories may be from the middle of the Planetary Boundary Layer
- ❑ It can be useful to start trajectories at different heights to see what influence the starting height has on the results

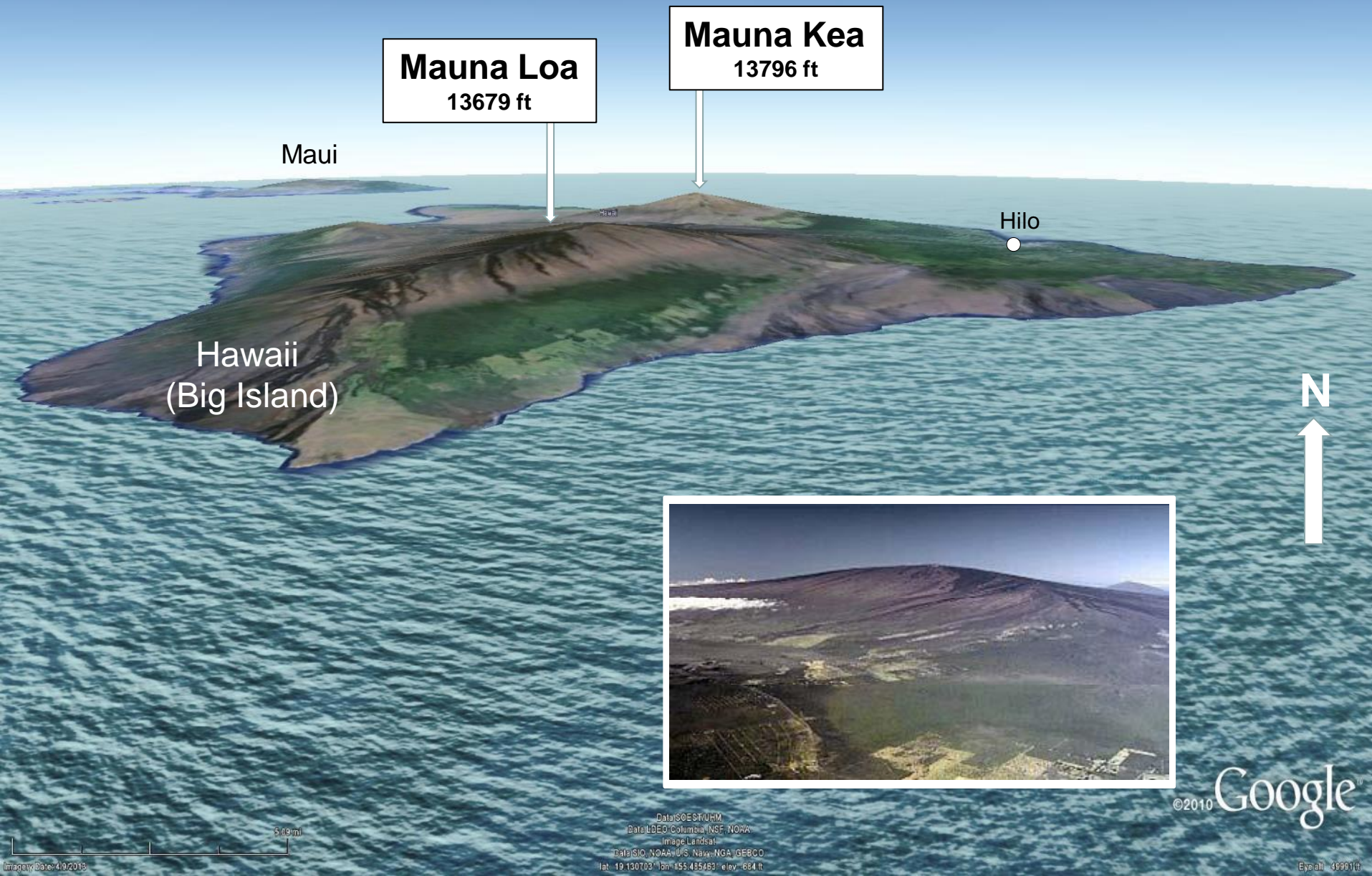
--- PBL Height ---

$$H = 0.5 * PBL$$



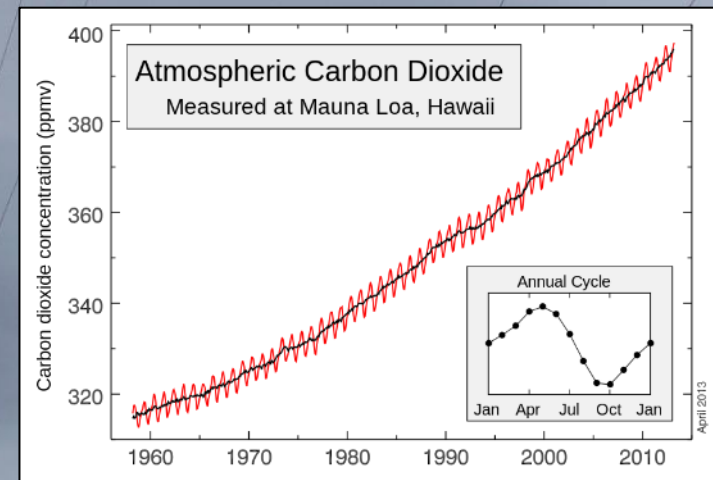
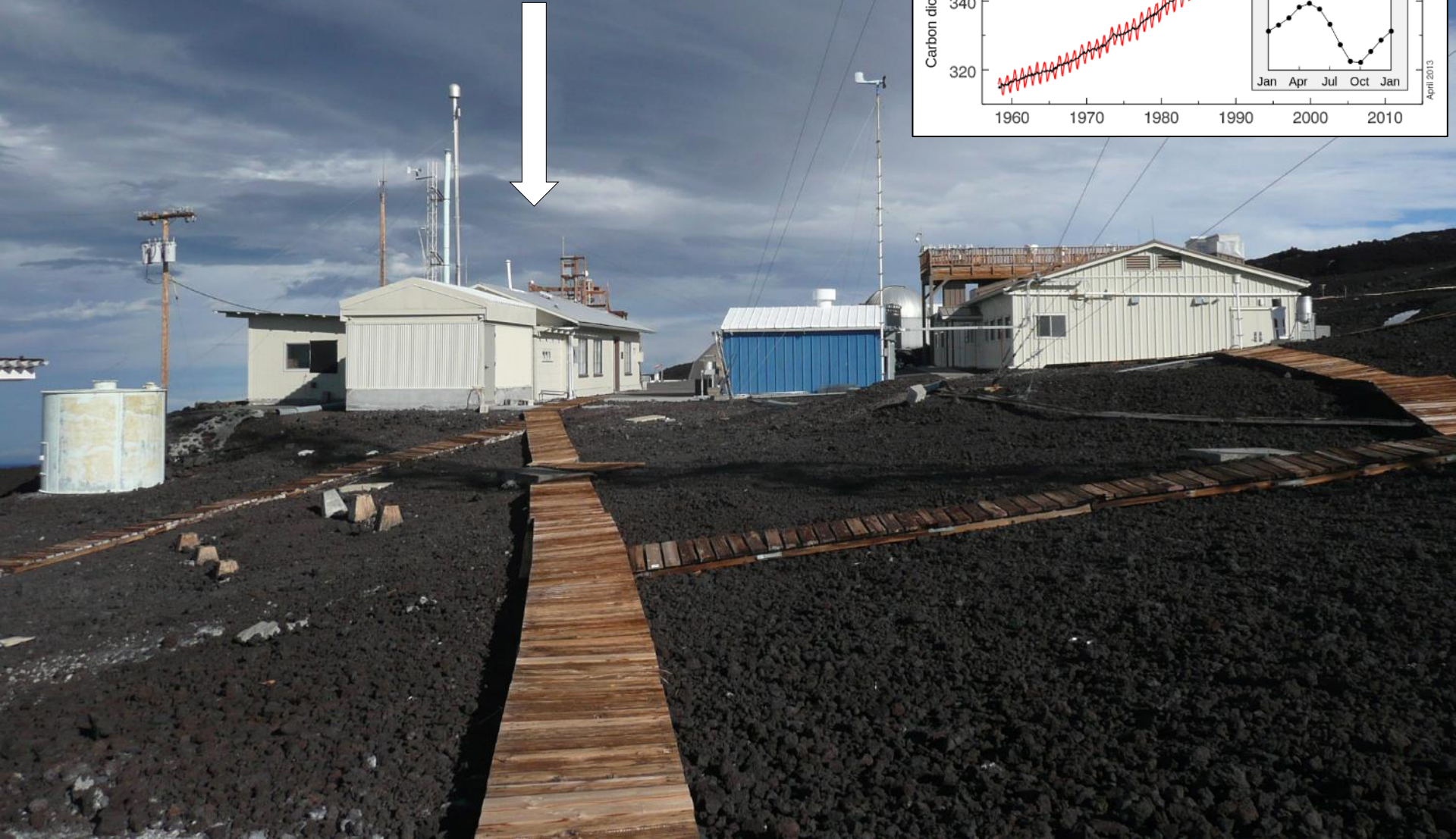


## CASE 2: at or near the top of a relatively isolated mountain





Mercury measurement  
instruments on roof and  
inside historic Keeling  
Building, near the  
summit of Mauna Loa





**Mercury  
measurement  
instruments on roof  
and inside historic  
Keeling Building,  
near the summit  
of Mauna Loa**



In this case, especially if sampling free-tropospheric air masses, would likely want to start the back-trajectory simply at the height of the summit above mean sea level.

- (1) Exact terrain height may not be that accurately characterized in the met data, so selecting a height Above Ground Level can be problematical
- (2) Use Advanced Menu to select “Relative to mean-sea-level”, and could then simply use the height of the summit

